



1/2. From the collection of Dr. J. S. Hensley, lith.

Stannard & Dixon

ORNITHORHYNCHUS ANATINUS

June 28, 1859.

Dr. Gray, F.R.S., V.P., in the Chair.

The following papers were read:—

1. NOTES ON THE DUCK-BILL (*ORNITHORHYNCHUS ANATINUS*).  
BY DR. GEORGE BENNETT, F.Z.S.

(Mammalia, Pl. LXXI.)

On the morning of the 14th of September, 1848, I received through the kindness of Henry Brooks, Esq., of Penrith, six specimens of the *Ornithorhynchus*—an unusually large number to be captured and sent at one time—consisting of four full-grown males and two full-grown females. As usual, the latter were much smaller in size than the former. Some of these animals had been shot, and others captured in nets at night, at a place named Robe's Creek, near the South Creek, Penrith, about thirty miles from Sydney. They were all in good and fresh condition, excepting one of the females, in which some degree of decomposition had taken place, but not sufficient to prevent examination. On dissection, I found the uteri of the females (although it was the commencement of the breeding season) unimpregnated; but in the four males the testes were all enlarged, resembling pigeons' eggs in size, and of a pure white colour. At other seasons of the year I have observed them in these animals not larger than a small pea, and this being the commencement of the breeding season could alone account for their size; so that they show in this respect a great resemblance to what is observed in most birds during the breeding season of the year. I am not aware of this peculiarity existing in any other Mammalia. The testes in all the specimens were of equal size, and measured  $1\frac{3}{8}$  inch in length and 1 inch in the diameter. I preserved one animal with the testes *in situ*, and detached the testes from the others, placing them in spirits for a further examination if required.

On examining the cartilaginous lips of these animals as they were lying heaped upon the table, dripping wet as if just emerged from the water, they were dark grey above, and mottled of a darker or lighter colour underneath, as is shown in the drawing made from life by G. F. Angas, Esq. (Pl. LXXI.), and which I have not yet seen correctly represented in any coloured drawing or engraving of the animal, in consequence of their not being taken from a living or recently dead animal. Over the eye is a tawny brownish-yellow spot, which marks distinctly the situation of that minute but brilliant organ of vision. These animals have horny teeth on the tongue. On the back part of this organ there is a bulb which serves to prevent the passage of the food collected in the mouth together with



the water into the gullet, and to direct the former into the temporary receptacles—the cheek pouches, which have an opening on each side at the back part of the mouth. In these I have found the food well comminuted, mingled with fine gravel of a muddy consistence, the food consisting of débris of insects and small shell-fish mingled with mud and gravel to aid digestion, and I have also found the whole length of the alimentary canal filled with mud or sand mingled with débris of food. I have observed the same in the *Echidna* or ‘Porcupine Ant-eater’ of the colonists. In the stomach of that animal I have found the sand which filled it exhibit under the microscope the remains of ants alone. The sand appears to me to be necessary for the proper digestion of the food in both animals.

On the morning of the 28th of December, 1858, I received a male and female specimen of the *Ornithorhynchus* alive; the male very large, and the female much smaller; they had been captured four days before the opportunity occurred of sending them. They were packed in a box with straw, carefully and securely fastened down; they had burrowed into the straw, and seemed warm and comfortable. When taken out and placed into a tub of water, they were very lively, diving down and remaining out of sight; and were so timid, that, when reappearing, it was only to place the end of the mandibles out of the water to inhale some fresh air, when they would speedily disappear again, seeming to be perfectly aware they were watched. The longest time this animal could remain under water, without rising to the surface to breathe, was full 7 minutes 15 seconds, by the watch. I placed them in the evening in a tub of water with turf and grass; they remained quite tranquil, bubbles of air rising occasionally to the surface of the water alone indicating their position, with a movement as if they were shifting their place in the tub, but without showing the body. After some minutes had elapsed, the tip of the black snout would appear on the side of the tub, to the length of about an inch, or just sufficient for the nostrils to be above the surface of the water, they being at the same time dilated as if to imbibe a supply of atmospheric air. They would only remain a few seconds, when they again speedily disappeared. When watched at a distance, one was seen to crawl out from the tub and escape upon the ground, but it was speedily captured and replaced. After leaving them in the water for about an hour, I placed my hand in the tub and took them out, and, on replacing them in the box, they soon burrowed down in the straw.

They are, as may be expected, fond of darkness and concealment, and dive under water or burrow under ground, coming to the surface to feed and enjoy themselves, principally at the dusk of the evening or at night.

I do not believe that the Duck-bill has ever been found in South Australia, no specimen having yet been brought from that locality.

These animals are rather crepuscular in their habits, sleeping for the most part of the day; and, in captivity, I have always found them very annoying at night, disturbing the rest of every one within hearing by the scratching and restless noises which they make in

their vigorous efforts to escape ; whereas in the morning they will be found rolled up and fast asleep. Still I am now of opinion that all the Australian crepuscular and night animals—judging from those I have been able to observe in captivity—although very active, and feeding principally at night, will leave their places of concealment during the day for a short time for the purpose of feeding.

The male animal, as if to keep up its bird-like character, has a spur, moveable, like that of the barn-door cocks. This is found also in the *Echidna* or Porcupine Ant-eater, another of the Monotrematous family ; but, judging from experiments on both animals, cannot be considered a weapon of offence or defence, and is for some purpose in the economy of the animal at present unknown to us. From my recent observations I consider the question of the spur in the male being a poisonous weapon as now decided ; for the living male specimen, though very shy and wild, can be handled with impunity. Although making violent efforts to escape, and even giving me some severe scratches with the hind claws in its attempts, still either in or out of the water he has never attempted to use the spur as a weapon of offence. Indeed the scratching I have before alluded to has not been done by the animal intentionally, as it is to all intents and purposes perfectly harmless ; but accidentally by the hind claws, which alone are sharp, in the efforts made to extricate itself from my grasp. The female will float feeding upon the water, and is much tamer than the male. The latter keeps swimming about below, and it is a long time before he ventures to put more than the snout above the water, and then rarely more than the head and a little of the upper part of the body.

From the 29th to the 31st of December they were lively and well. I placed them for one or two hours in the water morning and evening, to feed and wash themselves, which they appeared to enjoy exceedingly. I placed some meat minced very fine in the water, to try to feed them, so as to send them alive to Europe, as I considered the manner of feeding them an important preliminary step to ascertain. In their natural state they evidently feed in water. Just before I took them out in the evening they had burrowed to the bottom of the box, among the straw, very warm and comfortable, and they were cuddled close together.

On the third morning I found them much tamer, and, instead of diving down immediately they were placed in the water, they floated upon the surface. The female would permit me to look close to her little twinkling eyes ; her ears were always much dilated, and she would remain tranquil even when I touched or scratched her head or back ; but the instant I touched the sensitive mandibles, she would either dip down partially or disappear altogether under water for a short time. The male is evidently much more timid. I have only once seen his body on the surface of the water ; and when taking him out of the water and replacing him in his box, I found great difficulty in capturing him. The female, being generally upon the surface, is secured and placed in the box very easily, but the struggles of the male are very great ; and this makes it more difficult to take

him every time. The female paddles about upon the surface, and occasionally performs somersaults in the water ; the male sometimes comes up, but dives rapidly down again. The female floats upon the water without any apparent paddling, and remains in a sort of half-immersed position for a great length of time, with the beak lying flat upon the water. If any dust comes near the sensitive nostrils, a bubbling of water is seen to issue from them, as if to drive away the irritating substance ; and, if this does not succeed, the beak is washed in the water to remove it.

January 1st, 1859.—Both the animals this morning had a sleek, healthy, and lively appearance ; they did not require to be taken out of the box to be placed in the tub of water, but ran in themselves as soon as the lid of the box was opened. On entering the water they turned and gambled about, and then reclined on one side, scratching themselves with the hind claws. They would permit me to touch them without being disturbed ; indeed they had become so tame as to allow me to tickle and scratch them gently, and appeared to enjoy it very much. They generally remained half-submerged in the water ; it is only when touching the sensitive mandibles that they would dive down ; but even then they would not remain long under water. Their favourite position was half-submerged, with the mandibles resting down upon the surface of the water.

The female is languid and weak, but the male continues vigorous, diving and swimming about. When in the water they play together, occasionally tumbling one over the other, and then remain on the surface of the water, gently combing their fur. No attempt was ever made (even when he growled at being disturbed) by the male to injure or even scratch with the spur. When I took the male out or disturbed him at night, he growled, and afterwards made a peculiar shrill whistling noise, as if a signal call to his companion. It is principally in the evening and at night that these animals are in the habit of coming out of their burrows to sport and feed both in the water and upon the banks. On retiring to their burrows to repose, they roll themselves up like furred balls.

January 2nd.—The female appeared quite exhausted this evening. On being placed in the water, it paddled feebly about, and then, dropping its head, sank. On removing it, I found it was dead. It appeared, on examination, to be in poor condition.

January 3rd.—The male does not appear to be thriving, but I have now a large tub prepared for his reception, in which I have made the following arrangements :—The tub is 3 feet 6 inches in length by 1 foot 9 inches broad, and 2 feet deep. At one end I have had a wooden enclosure made, which was partially filled with earth and a sprinkling of straw ; this attempt to imitate the burrow was 12 inches deep and 15 inches in length. I then placed sand from a pond a few inches deep in the tub, in which I planted some fresh plants of *Damasonium ovatum* and other river plants from a pond in the Botanic Gardens. The tub was filled with water up to an inclined plane, which was turfed like a bank ; a level space was also left, on which turf was placed, so that the animal might repose



and clean himself on emerging from the water. On placing the male into it, he dived down and seemed to enjoy himself very much. He was still lively, lying upon the surface of the water and scratching himself, and again diving and swimming among the weeds; he then went upon the level bank and again plunged into the water; after remaining there for nearly an hour, sometimes upon the surface and often for a long time under water, he found his way into the burrow, where he remained. I covered the whole of the cage with zinc wire, by which means he had light and air, and we could observe all his actions. This was to prevent his escape, as he could readily have climbed up the surface of the tub. There are openings at each end of the cask, by which means we could draw off all the dirty stagnant water, and replace it with clean, as often as was required. I fed the animal on meat minced very small, and then thrown into the water.

Both of these animals were captured in a net. The man who took them stated he had kept two alive for fourteen days, feeding them upon river mussels, which he broke and gave them in the water: that they seemed to thrive very well; and that he supposed that they fed upon these mussels, as they had been in good health, their death having been occasioned by accident.

It surprises many why these animals, when captured in a net and left all night, are found drowned in the morning. It is my opinion that when one of these animals is captured in a net (as was the case with a male specimen taken in that way a short time since in the Mulgoa Creek, and found dead in the morning), it is entangled in the meshes, and, being unable to rise to the surface to breathe, is drowned.

January 5th.—Last night I observed the animal emerge from the water and enter the burrow: this was about 11 P.M. This morning I did not see him in the water; he appeared yesterday evidently drooping and sickly, and I fear we have not yet got into the method of feeding them. Their food being minute and delicate, it requires some experience to give it to these peculiar animals successfully. On opening the burrow the animal was not there, and on drawing off the water we found him dead and stiff at the bottom. Having, no doubt, been too weak to regain the burrow, he perished when in the water. Thus ends the first experiment of keeping Duck-bills alive.

On dissection I found that they had been starved; there was no food or sand either in the intestines or pouches,—nothing but dirty water. Should I procure other specimens, it is my intention to introduce into my tank river-shrimps and insects of different kinds, previous to placing them in it, so that they may obtain a sufficient supply of their natural food. Still all this will increase the difficulty of taking them to Europe, as the supply cannot be kept up at sea. They evidently are very delicate animals, and life is soon destroyed if nutriment is not rapidly kept up. These specimens were not emaciated in body before they died.

The testes in this male were very small, being not larger than

peas. The animal was full-grown, and of the size of the largest specimens usually seen.

Sometimes I have seen the male with the spur so far thrown back and concealed from view, as at a glance to be taken for the female, and when opened for anatomical examination to be mistaken for one; so that it is not improbable that the large testes resembling pigeons' eggs may have given rise to the notion of the animal laying eggs.

I have no doubt that the Duck-bills make their burrows high in the banks, so as to be out of the reach of the floods which occasionally prevail. Although amphibious in their habits, they require to repose on the dry land, and also to breathe atmospheric air at short intervals of time. Did they not adopt some plan of the kind, they would be destroyed or drowned in their burrows by the floods.

Another very young specimen was kept for three weeks, and fed upon worms; it had a rudimentary spur; it was very tame and easily fed by hand; it died on the 7th of February, and was preserved in spirits.

The plan I propose, besides introducing shell-fish, &c., is to feed them in captivity upon worms, and, if we succeed in keeping them alive in Sydney by that method for three months, to send them in the place of confinement, arranged as before described, to England, keeping them upon the same diet. At all events it is worthy of a trial; and, on quitting Sydney, I left the artificial burrow and other preparations with a person interested in the subject, in order that he might try the experiment.

I have remarked that, when healthy, these animals on emerging from the water are in the habit of cleaning and drying their fur, and seem to pay great attention to their being in a clean and dry condition, and appear also to be fond of warmth. Not long previous to the death of both these animals, I remarked that they did not dry or clean their fur, and I have no doubt that the chilliness produced by that circumstance accelerated their death, as the body—more especially in the male—was not so emaciated as would have been the case had death ensued from starvation.

## 2. ON THE LONG-TAILED FLYING-OPOSSUM (*BELIDEUS FLAVIVENTRIS*)\*, IN A STATE OF NATURE AND IN CAPTIVITY. BY DR. GEORGE BENNETT, F.Z.S.

In November 1858 I received from the district near Broulee, south of Sydney, from a station on the Mooruya River, a young female of this comparatively rare species, and, although so young, found it of a very savage and vicious disposition, spitting, screeching, and growling when handled, accompanying the noise by scratching and biting. The claws were sharp, producing scratches as severe as those of a cat; but the teeth, being as yet only partially developed, were not sufficient to produce much effect. It was evident that any animal displaying such

\* See Gould, *Mamm. of Austr.*, pt. 1. pl. 3.

vicious propensities when in so young a state would be formidable and savage when adult, which has been found to be the case. The aborigines, who capture them for food, pull them by the tail from the cavity of the tree, and kill them by dashing their brains out against it before they are able to inflict any injury upon their capturers. The animal, from the conformation of its feet, is evidently intended to live in trees, and therefore when seen on the ground has a very awkward, waddling gait. This is shown but seldom, and then only when it is obliged to walk upon the level surface of the ground. When climbing upon a tree it becomes more independent in character, and it regards the spectator from the top of its perch in a very different manner. It retires either between the forked branches or in the hollow cavities during the day to sleep, and at night passing from one tree to another by flying leaps, aided by its parachute-like membrane, descends to the ground only from unavoidable necessity, such as the trees being so far apart as to render it impossible to traverse the space by leaping. When pursued it takes to the highest branches, and springs from tree to tree with great rapidity, reminding me of monkeys seen in the forests of Singapore, which, when frightened, exhibit a similar degree of activity. It contrives to elude its pursuers by leaps, which, giving an impetus to the body, are very materially aided by the expanded membrane between the fore and hind feet. This enables the animal to pass over a very considerable distance in its leaps. It is surprising to see it passing from branch to branch and tree to tree in the clear and delightful atmosphere of a fine Australian moonlight night, with so extraordinary a degree of skill and rapidity. But I remarked that the flying leaps were invariably downwards in an oblique direction; and that, when desirous of ascending, the creature would climb rapidly, and if overtaken would cling so tenaciously to the bark of the tree, as, while living, to be very difficult of removal.

Having become tamer from confinement, the animal would suffer itself to be handled without scratching and biting as at first, and would lick the hand for sweets, of which it was very fond, and permit its little nose to be touched and fur examined in any gentle manner. But if any one attempted to take it up by the body, it became most violent in temper, biting and scratching with savage rage, at the same time uttering its snarling, wheezing, spitting kind of guttural growl. If caught by the tail it would be more quiet (excepting if held too long in one position), and would spread the membranes as if to save itself from falling. Its beautiful fur above and beneath could be well seen in that position, much better than in the ordinary position of the animal when in action. Although tamer in confinement, it appears devoid of any attachment to those who feed it, for it evinces all the symptoms of dislike at being taken up by the body, whether by a stranger or by the person by whom it has been accustomed to be fed. It is a crepuscular and night animal, sleeping most of the day, coiled up in a circle, with its bushy tail thrown over it like a blanket; but it occasionally wakes up and feeds a little.



It was fed upon milk, raisins, and almonds ; and indeed sweets of all kinds in the form of preserved fruits, as well as loaf-sugar, met with its approbation. It appears to be a very small eater. In its wild state it feeds upon the honey of the blossoms of the *Eucalyptus* or gum-trees, as well as on the tender shoots and seeds. No doubt insects would form a portion of its diet. The length of the animal in its present young state, evidently not full-grown, is from the head to the extremity of the tail 1 foot 10 inches, and the length of the tail alone is 1 foot 2 inches. The upper part of the body is of a greyish-black, with handsome deep black broad lines on the upper part of the head, back, and the edges of the parachute-like membrane. The tail is cylindrical, black, and bushy. The under surface of the body is white, with yellowish-white under the throat and about the centre of the abdomen ; feet deep black, nails white. The muzzle is naked and of a delicate pinkish flesh-colour ; the naked palms of the feet of a similar colour. The ears are naked, semitransparent, and mottled with black. The under side of the membrane between the feet is also of a dirty white colour ; the fur is rather long, loose, and of a soft silky texture, very delicate and fine to the touch. The head is short and broad ; the ears are also broad ; the eyes black, and dull during the day, more brilliant and animated at night, which conveys the idea that it has very imperfect vision during the daylight.

I have before observed that during the day it is sluggish, but at night full of activity. The only time I saw it active during daylight was on the day on which it was taken to the Zoological Gardens. This may have been occasioned by the cage having been much shaken on the road, or perhaps the gloomy atmosphere of London on that day might have led the animal, so accustomed to the clear sky of its native climate, to regard it, although barely noonday, as the approach of night.

In Australia the blacks capture them for food, and having prepared them by singeing the fur, cook them with the skins on, which gives the meat a more delicate and juicy flavour ; but by the colonists they are valued only for their fur, which, in many, for delicacy and beauty, almost equals that of the Chinchilla. This animal traverses the tops of the trees, and passes to the extremity of the outermost branches with the greatest facility. When leaping, it is observed always to ascend a little at the termination of the leap, by which the shock received in coming from a great height is broken.

My captured specimen escaped one night from its place of confinement, and was seen in one of the uppermost branches of a lofty weeping-willow tree, quietly reposing between one of the forks of the larger branches. A boy was sent to climb up the tree to come upon the animal when asleep. By creeping cautiously up he approached the creature without being seen or heard, and, succeeding in seizing it by the tail, threw it down a height of about 60 feet, when by the assistance of its parachute-like membrane it alighted safely upon the ground, and was then readily secured again. It holds a raisin or almond in its fore-paws, licking and nibbling it. It is often seen lying upon its back at the bottom of the cage when feeding, and when

drinking milk holds the small vessel containing it between its fore-paws, lapping the milk as a kitten is observed to do. It is evident, from the fondness of this animal for sweets, that, when the *Eucalypti* are in flower, it subsists upon the honey which the blossoms yield in very large quantities (this honey is in such abundance as to afford subsistence to honey-eating parrots and other birds, as well as to these animals, and also to myriads of insects of various species). When these have disappeared, it lives upon the nuts and young foliage, and also upon insects. It drinks frequently, and will take water, but evinces a decided preference for and thrives best upon milk. I found that it would sometimes eat the young flower buds of the *Eucalyptus*, and was also fond of succulent fruit, such as apricots. Although the formation of its teeth would indicate a mixed diet, yet it never, in a state of captivity, has as yet attempted to eat animal food when given to it.

It left Sydney, N. S. Wales, on the 14th of March 1859 by the overland route, arrived at Southampton on the 27th of May, and was safely deposited in the Gardens of the Society in Regent's Park on the 28th of May, in excellent health and condition, and much grown since it left N. S. Wales.

### 3. NOTES ON AUSTRALIAN CUCKOOS. BY DR. GEORGE BENNETT, F.Z.S.

The Bronze-winged Cuckoo (*Chrysococcyx lucidus*) very frequently, but it appears not invariably, deposits its egg in the nest of the Fan-tailed Flycatcher (*Rhipidura albiscapa*). I bring before the Society a sketch of a Fan-tailed Flycatcher feeding the young of that species of Cuckoo, from specimens captured at Ryde, near Sydney, and now preserved in the Australian Museum, from which the drawing was made. This Fan-tailed Flycatcher was shot in the act of feeding a young bird in its nest, which, when examined, was found to be the young of the Shining Cuckoo (*C. lucidus*),—the Golden or Bronze Cuckoo of the colonists. The nestling was full-fledged, brown with black markings. It was ludicrous to observe this large bird filling up the entire nest with its corpulent, well-fed body, and receiving the sustenance intended for several young *Rhipiduræ*. We could imagine underneath the nest the skeletons of the former tenants sacrificed to the rearing of this parasitical Cuckoo.

On the morning of the 25th of February, 1859, Mr. Alfred Denison pointed out to me on the lawn in the garden of Government House among the flower-beds a male Purple Warbler (*Malurus cyaneus*) of glowing colours, perched upon a rose bush, and the female in its pale-brown plumage. They were both actively engaged, hopping about and wagging their tails (which they carry generally in an elevated position), in attending to the wants of a young bird much larger than themselves. This was found to be the

young of the *Cuculus inornatus*, having the speckled breast and greyish-coloured back of the immature age of that species. It had been brought up in fine condition by the old birds, which appeared, judging by their actions, very proud, and apparently took the greatest care, of their parasitical charge, doubtless regarding its size with great satisfaction as an improved breed of Little Warblers.

#### 4. ON THE FISH CALLED GLYPHISODON BIOCELLATUS.

BY DR. GEORGE BENNETT, F.Z.S.

(Pisces, Pl. IX.)

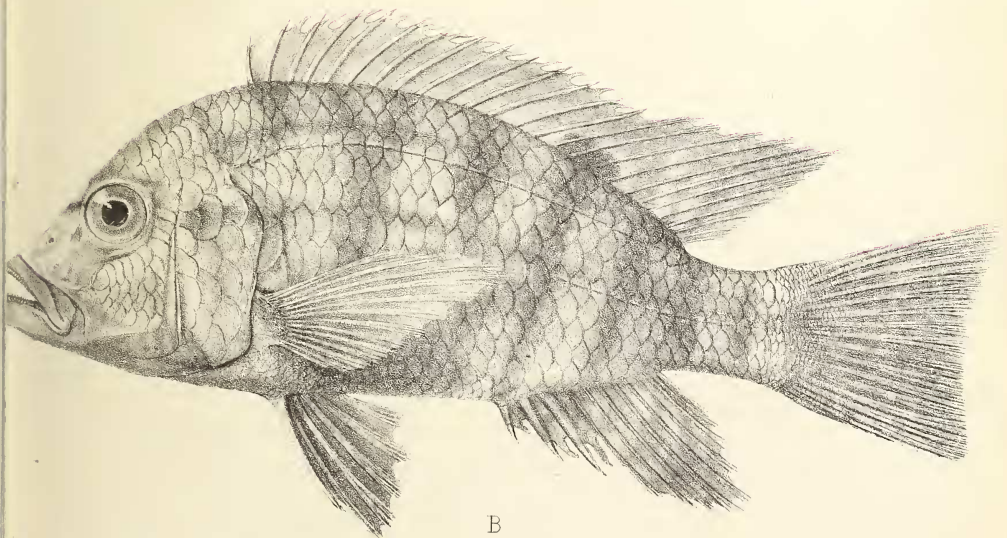
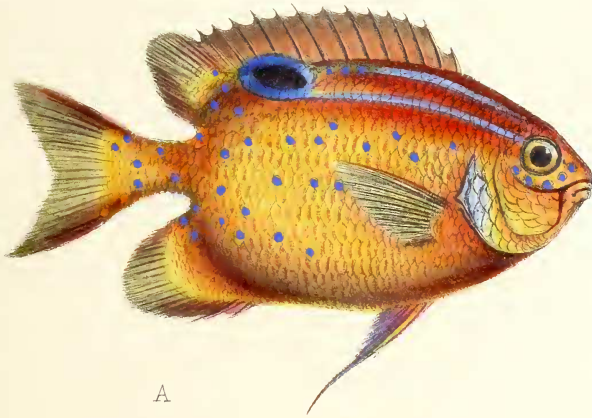
The following notes on the *Glyphisodon biocellatus*, together with an accurate drawing from life, were given to me by Mr. G. F. Angas for the purpose of being brought before the Zoological Society. This interesting and elegant little fish we at first supposed to be a new species; but on my arrival in England I found it was the *G. biocellatus* of Cuvier. As, however, the description of that eminent naturalist has evidently been made from specimens preserved in spirits, his account, as far as regards colour, cannot be entirely depended upon; and, as the drawing gives the accuracy of colour and the brilliant hues of the fish when seen alive and swimming about the aquarium, it will form an interesting addition to our more accurate knowledge of Australian fishes. Although the fish itself is not at present readily captured even at Sydney, yet I hope that before long it may be brought to Europe, to adorn the aquaria of this country.

GLYPHISODON BIOCELLATUS, Cuv. (Pl. IX. fig. 1.)

"This brilliant and elegant little fish is found in the pools amongst rocks at low spring tides, both on the outer coast and in several localities inside the harbour of Port Jackson. The first time I met with it was amongst the rocks in a pool at Coodgee Bay, about four miles from Sydney. The extreme brilliancy of the colours, gold and azure, as the little creatures dart in and out amongst the cavities of the rocks, reminds one of jewels flashing in the sunlight. They are remarkably shy, and on the slightest noise or the shadow of a person approaching the pool, they dart in and conceal themselves under the ledges and in the holes of the rocks; hence they are very difficult to catch. They generally make their appearance on the coast about November, and remain till May; during the winter months I have looked for them in vain. The usual size varies from 1 to 2 inches in length. The one figured is of the largest dimensions that has come under my notice; so that it is probable that 4 inches is the largest size they acquire.

"In the aquarium they are most exquisite objects. Last summer I only succeeded with every care in keeping them alive in a well-established tank for a week or ten days. At the present moment





A. *Glyphisodon biocellatus*. B *Halogenes tristrami*, *Ghr*.

I have a specimen in perfect health, which was captured at North Harbour three weeks ago. They eat small worms and crumbs of bread greedily when in confinement.

"I have sent a small specimen in spirits to accompany the drawing.

"GEORGE FRENCH ANGAS."

5. NOTES ON SHARKS, MORE PARTICULARLY ON TWO ENORMOUS SPECIMENS OF *CARCHARIAS LEUCAS*, CAPTURED IN PORT JACKSON, SYDNEY, NEW SOUTH WALES. BY DR. GEORGE BENNETT, F.Z.S.

Sharks are formidable for their strength and the numerous rows of teeth with which their powerful jaws are armed ; these teeth, inclining backwards, prevent the prey, once swallowed, from readily escaping without severe laceration, even if at all ; the teeth are slightly moveable, which mobility, being merely to an erect position, renders the escape of prey still more difficult. The stomachs of these fish are found to contain a very mixed diet, some holding small fishes, or flying squids ; others, paper, canvas, even tin pots, and offal of every description cast overboard from ships,—the stomachs being of enormous capacity, and, to judge from the contents and quantity found in them, these fishes having enormous powers of digestion.

As an article of food, a Shark is not considered good eating ; but the flesh of a young one is preferable to that of many of the deep-water fishes, and by some considered superior to that of Bonitos or Albicores. The large Sharks are very coarse food : the liver in every species yields a large quantity of oil.

I have observed that if several Sharks are together, it is very seldom that a Pilot-fish (*Naucrastes*) is seen to accompany them ; but a solitary Shark is rarely or never seen without being accompanied by one or more of the latter. On capturing a Shark which was accompanied by Pilot-fish, by keeping the Shark in the water until it was exhausted, or, as the sailors termed it, "drowned," the Pilot-fish kept constantly about it ; and, by aid of the towing net at the end of a long stick, I succeeded in capturing it as it swam on the surface of the water.

We find, as well in the Sharks as in all those kinds of fish which have a prolonged snout, the mouth situated far underneath, and the upper portion of the tail considerably lengthened, so that it may aid them in turning readily round ; for this purpose also the eye-ball revolves on a cartilaginous pedicle with a ball and socket joint, so that they are capable of turning that organ in every direction to capture their prey.

An enormous Shark (*Carcharias leucas*, Valenciennes) was lately captured in Port Jackson by two boatmen, T. Mulhall and J. Rica, who finding him ranging about the harbour, procured a harpoon and went in chase of him. They succeeded in harpooning the monster, who when struck ran away with a great length of line. Being tired,

and finding himself fast, he rushed back again and attacked the boat, leaving five teeth broken in the wood. The boat fortunately was strong enough to bear the shock. He then ran off again to some distance, and, finding escape hopeless, rushed a second time at the boat. On this the men attacked and finally succeeded in disabling him by violent and repeated blows upon the head with a large piece of wood; they then towed him the whole length of the line, so as "to drown him," as it is termed, and brought him to Sydney alive, but helpless. He died some hours after being landed on the wharf, being very tenacious of life. The huge monster was soon a great object of curiosity, and, being enclosed, was duly advertised for exhibition to the public; whereby the capturers realized the very handsome sum of about £80. The animal was afterwards presented to the Museum, in which institution it remains in an excellent state of preservation. Its size, by actual measurement, is as follows:—

	feet.	inches.
The circumference of the body, about the centre	6	7
Height from the abdomen to the base of the dorsal fin . . . . .	2	10
Height from the base of the pectoral fin . . . . .	2	0
Length from the end of the tail to the point of the nose . . . . .	12	4
Length of dorsal fin . . . . .	1	1
Breadth of ditto at base . . . . .	1	4
Length of pectoral fin . . . . .	2	3
Length of second pectoral fin . . . . .	0	8
Caudal fin, upper part . . . . .	2	4
Caudal fin, lower part . . . . .	1	9
Anal fin . . . . .	0	3½
Second dorsal fin . . . . .	0	4
Expansion of jaw, breadth . . . . .	0	10
Perpendicular length of jaw . . . . .	1	0

This is the expansion of the jaw in the dried state; when alive no doubt it could have been expanded to a greater extent. The head appears to be small in comparison to the enormous bulk and length of the body. There is a singular pectinated line running down on each side near the back from the base of the head to the commencement of the tail, as if situated just beneath the cuticle. The fish in its recent state was of a uniform bluish-grey colour, excepting the dorsal, caudal, and other fins, which were of a darker tint. Branchiæ 5. No spiracles. I would not venture to send one alive to the Zoological Gardens, as its keep would be ruinous; for the contents of the stomach were as follows:—

Eight legs of mutton, half a ham, hind quarters of a pig, head and fore legs of a bull dog with a rope round the neck, about 300 lbs. of horse-flesh, a ship's scraper, and a piece of bagging.

From the liver of the fish 12 gallons of oil were obtained.

On the 29th of September, 1858, I examined a Shark harpooned in the harbour of Port Jackson. It was similar in character to the



species of *Carcharias* previously described, and preserved in the Australian Museum. It measured as follows:—

	feet.	inches.
Length from the extremity of the nose to the tail . . . . .	13	0
Circumference round the neck . . . . .	5	6
Length from one end of the pectoral fin to that of the other . . . . .	6	2
Length of pectoral fins . . . . .	2	4
Circumference of the body below the pectoral fins . . . . .	7	0
Length of dorsal fin . . . . .	1	10
— of tail . . . . .	2	10
— of ventral fins . . . . .	1	1
— of anal fins . . . . .	0	5
— of second dorsal fin . . . . .	0	5

The contents of the stomach were large quantities of horse-flesh, as it was feeding upon a dead horse when captured. In the upper jaw there was apparently one row of large teeth, and at the angle there were two teeth of a second row, the largest tooth measuring  $1\frac{1}{4}$  inch in length. In the lower jaw there were two rows of teeth. The teeth were inclined backwards and moveable. On a further and more minute examination it was discovered that five rows or more of teeth, fully formed, and well-serrated at their edges, were lying down under the loose thick skin or gum, inside the mouth, either to be elevated if required, or to supply the place of the front rows, when damaged or broken by accident.

I have observed the teeth in many Sharks disposed in five or more rows, the first and second rows erect, the others recumbent and concealed by a kind of gum.

In the early days of the settlement of New South Wales the oil of the Shark was found to be of great use. Collins states that “nothing was lost;” even the Shark was found to contain a certain supply; the oil which was procured from its liver was sold at 1s. a quart; and but very few houses in the colony were fortunate enough to enjoy the pleasant light of a candle. Even now at the Custom House station at Botany Bay Heads, Mr. Brett told me he captured the Spotted Tiger Shark, which species is very numerous about that locality, Watt’s Shark, and other kinds, for the sake only of the oil to be produced from the livers, which he found very serviceable for lamps.

In the stomach of a Shark, near the pyloric orifice, I found a large quantity of Entozoa, varying in length, of a white colour and flattened form. These, being placed with a portion of the stomach in sea-water, displayed great vitality, rapidly elongating and contracting themselves; but they soon died on being immersed in fresh water, which was done previous to placing them in spirits.

A question may arise if any annoyance is produced to the Shark by the multitudes of these parasites; they could hardly have sufficient power to irritate the stomach of a fish that swallows, and, as it

is asserted, digests, tin pots, cloth, canvas, &c. I remarked that the inner surface of the stomach to which these parasites were attached appeared inflamed.

On the afternoon of the same day, three small Sharks were taken, the whole of which were also infested by similar parasites about the pyloric orifice of the stomach.

It is not a little singular that four Sharks caught about the same locality should have parasites. In one of the Sharks the worms were not only about the pyloric orifice of the stomach, but extended through the whole extent of the intestines, even penetrating the coats of the intestines themselves; and on examination, irritation of the coats of the bowels, and in some parts inflammation and ulcerated portions, were observed in several situations.

Preparations of these structures are deposited in the Museum of the College of Surgeons of England.

6. NOTES ON THE RANGE OF SOME SPECIES OF NAUTILUS, ON THE MODE OF CAPTURE, AND ON THE USE MADE OF THEM AS AN ARTICLE OF FOOD. BY DR. GEORGE BENNETT, F.Z.S.

The three best known species of the genus *Nautilus* are *N. pompilius*, *N. macromphalus*, and *N. umbilicatus*. The first species is the most common and has the widest range; the second species is more limited in its range, and rarer; the third, although found in collections, is scarcer than the two preceding, and has a range peculiar to itself. The range of *N. pompilius* embraces the islands of the Eastern Archipelago, Erromanga, Aneitum, and other islands of the New Hebrides, and also the Feejee group. *N. macromphalus* is found about the Isle of Pines and New Caledonia; and the rare *N. umbilicatus* in the Solomon Archipelago, New Georgia, New Britain, New Ireland, and probably to the eastward of these groups of islands. Two very fine and perfect shells of *N. umbilicatus* were given to me in Sydney, which had been procured from the natives of Denys Island, New Ireland, eastward of New Guinea. Dr. Macdonald, of H. M. S. "Herald," informs me that on examination and comparison, there is a marked difference between the *tentacula* or feelers, in the first two species. The sculpturing on *N. umbilicatus* is very distinctly marked on the external surface of the shell, differently from what is observed either in *N. pompilius* or *N. macromphalus*, and forming one of its very distinctive characters. The outer edge of the lip of the perfect shell in *N. umbilicatus* has a narrow, black rim, continuous from the anterior portion of the whorl; this obtains in perfect shells. I remark that in *N. pompilius* and *N. macromphalus* the black rim is on the inner side of the edge of the lip. The colour of the shells in the different species varies from brick-red and orange (of brighter or paler tints) to nearly a dark crimson colour, being as various as the colour observed among the common Cowrie shells.

The natives of the New Hebrides, New Caledonia, and the Feegee group of islands capture this Nautilus, and use it as an article of food.

When at Erromanga (one of the New Hebrides group), I observed about the fires of the natives shells of a small species of *Harpa*, and remains of *Nautili* shells and their horny mandibles, as if they had been used at a recent meal. A lady residing at the Isle of Pines, at my request, sent me a fine specimen of *N. macromphalus*, with the animal, which she informed me was readily procured for her by the natives, who dive for them; she soon after sent a second specimen of the same species, but it was not in so perfect a state as the first. They were both deposited in the Australian Museum.

In 1857 the same lady, then residing at the Island of Aneitum, one of the New Hebrides group, having removed there from the Isle of Pines, when I wrote to her for a specimen of the Nautilus in the shell, and asked whether she had observed them used by the natives as food, and also if they had any method of capturing them, sent me the following reply, accompanied by a specimen of *N. pompilius* in the shell:—

“I send you, as requested, a Nautilus containing the animal. I was fortunate in procuring one so soon after I received your letter; it was cast on shore during a heavy gale, and found by one of our native servants. He was just in the act of putting it upon the fire for a meal, when one of the native girls from the Isle of Pines, knowing the value we set on them, stopped him. This will be an answer to your inquiry. The natives sometimes take them in their fish-falls in from three to five fathoms water; the bait they use is the Sea-egg (*Echinus*). They are very fond of them. In some of the islands they make a kind of soup of them. These animals are very plentiful at Ware, an island about thirty miles from New Caledonia; and I have noticed at that place some difference in the shell” (*N. macromphalus* being found about that coast) “from the one we have at this place. I am acquainted with a person who was wrecked at that island, and used to have them curried frequently: he says they taste like whelks when roasted. I once saw one floating past our residence near the beach at the Isle of Pines.”

The mode of capturing this animal by the natives of the Feegee Islands was kindly communicated to me by my friend Dr. J. W. Macdonald of H. M. S. “Herald,” to the natives of which group of islands, as at the Isle of Pines and New Hebrides group, it furnishes an article of food.

“The Feegeans esteem the Pearly Nautilus highly as an agreeable viand, and their mode of capturing it, for the embers or for the pot, is not a little interesting. When the water is smooth, so that the bottom at several fathoms of depth, near the border of the reef, may be distinctly seen, the fisherman in his little frail canoe scrutinizes the sands and the coral masses below to discover the animal in its favourite haunts. The experienced eye of the native may probably encounter it in its usual position clinging to some prominent ledge, with the shell turned downwards, and preparations are accordingly

made for its capture. The tackle consists, first, of a large round wicker-work basket, shaped very much like a cage rat-trap, having an opening above, with a circle of points directed inwards, so as to permit of entry, but preclude escape; secondly, a rough piece of native rope of sufficient length to reach the bottom; and, thirdly, a small piece of branched wood, with the branches sharpened to form a sort of grapnel, to which a perforated stone is attached, answering the purpose of a sinker. The basket is now weighted with stones, well baited with boiled cray fish (*Palinurus*), suggested no doubt by the large quantity of the fragments of Crustacea usually to be found in the crop of the Nautilus, and then dropped gently down near the victim. The trap is now either closely watched, or a mark is placed upon the spot, and the fisherman pursues his avocations on other parts of the reef, until a certain period has elapsed, when he returns and in all probability finds the Nautilus in his cage feeding upon the bait. The grapnel is now carefully let down, and having entered the basket through the opening on top, a dexterous movement of the hand fixes one or more of the points or hooks, and the prize is safely hoisted into the canoe. Thus we observe that, although it has been a matter of doubt if the animal could be so silly as to run into the nets of the fishermen, as related by Rumphius, whose account was supposed to be exaggerated, yet it is now found that the *Nautili* are in reality stupid enough to run into the well-baited baskets of the Feegean and Aneitum fishermen."

The Pearly Nautilus is not found at the Navigator group of islands in the South Seas, and the shells form at that group of islands an important article of exchange. They are brought by European vessels from New Caledonia and the Feegee Islands as articles of trade, and are bartered with the natives at the rate of four for a dollar, or 1s. each. I am told it is indifferent to the natives if the shells are old or rather damaged, as they use the chambered portion for ornament, rubbing them down to suit the various purposes to which they apply them. They also make armlets and other ornaments from the shell. A vessel arrived at Sydney from New Caledonia with several tons of these shells, which were disposed of as an article of trade to the Navigator and Friendly Islands; they were sold at Sydney at the rate of about  $1\frac{1}{2}d.$  each.

I have seen a very elegant fillet formed of these shells (of very small size, and brought from the Samoan Islands). The fillet, or band, was composed of seventeen small shells, evidently principally of *N. macromphalus*, or Pearly Nautilus, each shell having the upper part removed, and the chambered portion only of the shell remaining. Part of the outer coloured coat was left on some of them near and in and about the umbilicated part of the shell; the whole of the shells were similar in size, being about one inch in diameter; the external coat was removed, so as to exhibit the beautiful pearly hue; and the brilliancy of the whole ornament was that of the most highly burnished silver. They are used by the natives in war, and are highly valued. This fillet was valued at 20 dollars, at which price it was purchased in barter. The shells are fixed to a small midrib of



1 *Cynops chirogaster*, Gray  
2 *Plethodon peruvialis*, Gray



cocoa-nut leaf, which supports them on a worked band of sinnet ; upon this, under the row of seventeen shells, small oval pieces of the same pearly shell were placed, to add to the ornamental effect. The length of the band was 12 inches (not including the tying strings) and the depth 3 inches.

7. DESCRIPTIONS OF NEW SPECIES OF SALAMANDERS FROM CHINA AND SIAM. BY DR. J. E. GRAY, F.R.S., V.P.Z.S., ETC.

(Reptilia, Pl. XIX.)

Mr. Fortune, on his late return from China, brought with him for the British Museum a bottle containing a Salamander, some Fishes, and a Leech, collected from a river on the north-east coast of China, inland from Ningpo.

The Fishes are two varieties, olive and golden, of a very peculiar monstrosity of the common gold fish of China, *Cyprinus auratus*, which has long been known, and is figured in several of the Chinese works.

It is peculiar for having a very short and thick body, entirely destitute of any dorsal fin, with a regularly trifid or three-finned tail, and more especially for having very large and swollen eyes, which give a distorted appearance to the animal ; the pupil of the eyes being on the upper part of the swollen orbs, and on a level with the upper surface of the back.

The Salamander or Newt was obtained from the same stream. It is curious as being the first example of the family which has been found in Continental Asia, though there are several species common in Japan.

It is nearly allied and appears to belong to the same genus as one of the Japanese specimens ; but at the same time it is quite distinct, as a species, from any yet received from that country.

It may be indicated as—

CYNOPS CHINENSIS. (Pl. XIX., fig. 1.)

Above uniform dark olive (in spirits) ; beneath bluish-black, with small, unequal, irregular, yellow spots on the chin, neck, belly, and underside of the legs ; the spots on the belly are the largest ; the under edge of the tail reddish-yellow ; skin acutely granular.

Var. 1. Tail pale grey, brown on each side, with a blackish marginal band above and below, and with a yellow inferior edge.

*Hab.* River N.E. Coast of China, inland from Ningpo.

This species resembles in the form of the head, the parotoid glands, and in the granular state of the skin, *Cynops pyrrogaster* of Japan ; but it differs from it in its much larger size and in the style of its colouring, especially on its under side. *C. pyrrogaster* is dark red, with large black blotches or spots ; while this is dark lead-coloured, with small yellow spots.

The Leech is one of the Land Leeches, with a lunate head, similar to those received from Ceylon.

The British Museum has also received in a collection of reptiles and fishes, obtained in Siam by Mr. Mouhot, two specimens of a species of Newt, which is so exceedingly like the *Plethodon glutinosum* of North America in external appearance, that is to say in form, size, and colour, and also in the distribution of the palatine teeth, that I was at first inclined to regard them as specimens of the American animal which had been sent to Siam. But I cannot believe this to be the case, as they were inclosed in a bottle containing several kinds of reptiles, which are evidently all natives of Siam. I may observe that this is the first time that any species of Newt has been received from Continental India.

I propose to designate the Siamese species

*PLETHODON PERSIMILIS.* (Pl. XIX., fig. 2.)

Black, white-speckled, the specks closer and more abundant on the sides; the hind toes elongate, unequal. Tail compressed.

*Hab.* Siam.

The only character that I can find between the two specimens received from Siam, and some twenty or more of *P. glutinosum* from different parts of the United States in the Museum collection, is that the toes of the hind feet appeared rather longer, more slender, and unequal in length, and the tail much more compressed.

#### 8. DESCRIPTION OF SCAPHA MARIA-EMMA, A NEW SPECIES OF VOLUTE. BY DR. J. E. GRAY, F.R.S., ETC.

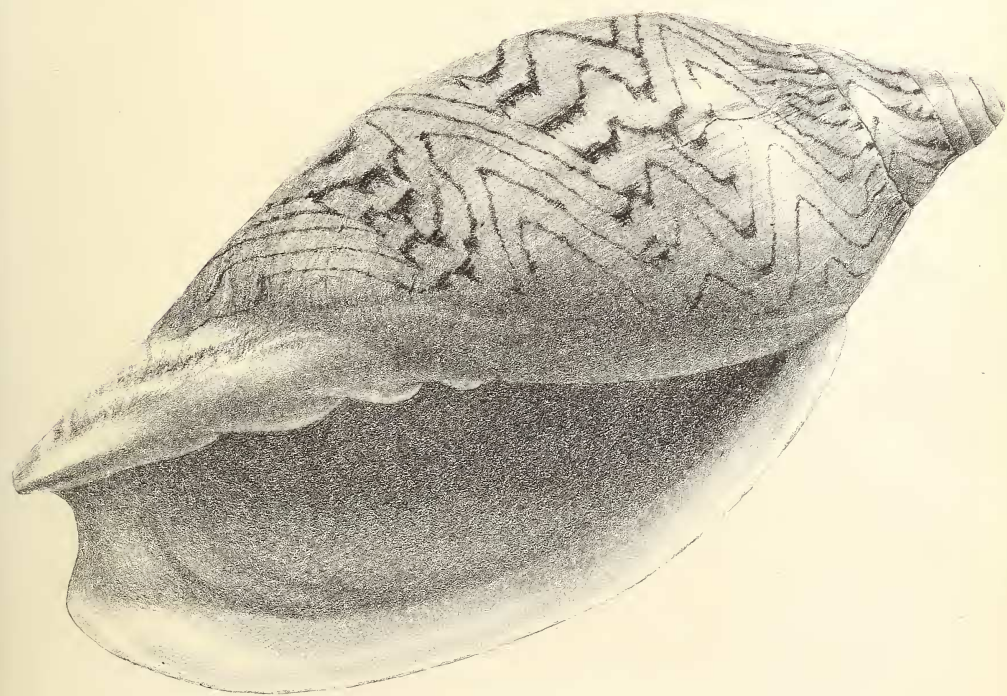
(Mollusca, Pl. XLVIII.)

Mr. Cuming kindly sent to me a specimen of *Volute*, which had been sent to him by Mr. Jamrach, who received it from Singapore. It is most probably from some of the Malayan Islands, Singapore being merely the entrepôt. The specimen is unfortunately not in a very good condition, being rather sponge-eaten on the hinder part of the body whorl, and having a small hole on the spire; but it is otherwise in a perfect state, with its proper outer lip, so as to be in a good state for description.

It combines the characters of several species. It has the large, regular, smooth-whorled, spired nucleus, of *Scapha aulica*, *S. deshayesii*, *S. luteostoma*, &c., the fusiform shape of *Scapha rutila*, and especially of the smooth variety of *S. aulica*; but it is entirely differently coloured from both of them and all the other large species of the genus, the colouring resembling that of *Amoria undulata*. Indeed some conchologists, to whom I have shown the specimen, have regarded it as a very large specimen of the latter species, which has lost its external polished coat, and with a larger nucleus than usual.

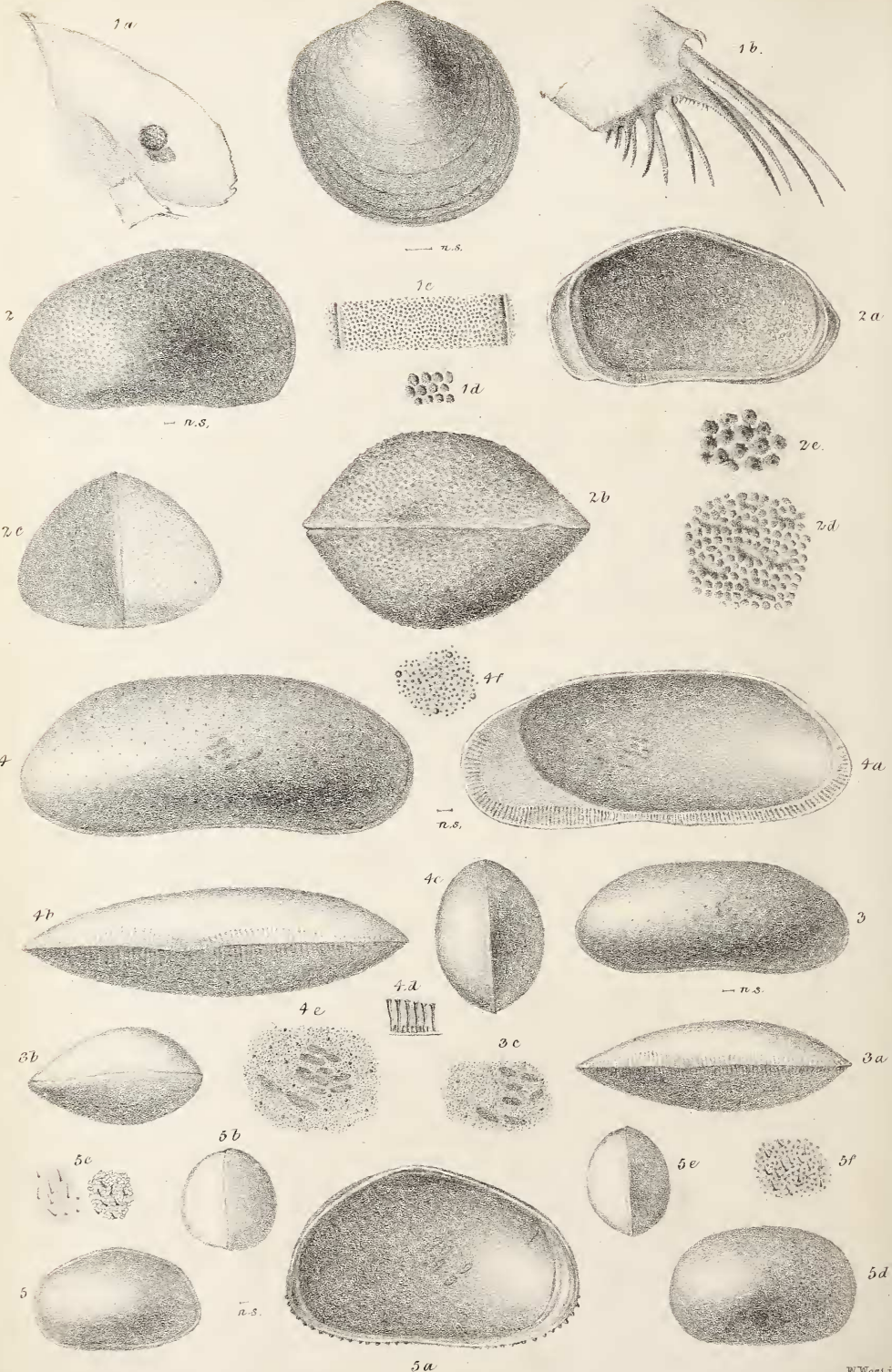
A careful examination of the shell at once shows the fallacy of such







1



an idea. The form and structure of the nucleus are entirely unlike that of the genus *Amoria*. The shell is entirely destitute of any polished coat, which is the character of that genus, as is proved by the examination of the body whorl near the inner lip; for, though the very thin inner lip is almost entirely destroyed, yet the groove which indicates its extent is well marked by a rather broad impressed line, defining its limits and showing that it was not even extended over the lower part of the body whorl of the shell, much less over the extreme surface of it.

SCAPHA MARIA-EMMA. (Pl. XLVIII.)

Shell ovate, fusiform, pale brown, with narrow, deeply-waved, longitudinal, dark brown lines, forming four more or less distinct, interrupted, spiral bands, consisting of the broader and straighter portions of the longitudinal lines; nucleus large, subcylindrical, with a regular spiral, smooth and rounded apex, without any crenulation near the suture; spire conical; whorls rather ventricose; outer lip rather arched.

*Hab.* —?

I have named this fine species after my wife, Maria-Emma Gray, whose work, entitled 'Figures of Molluscous Animals for the use of Students,' having brought the figure of the animals of a large number of shells within the reach of students, has entirely changed the previous condition of the science of conchology (as is proved by the works of Adams, Philippi, Weigmann, and other Malacologists); and who was an industrious collector of shells and mollusca before our marriage, now many years ago.

We have also received a *Volute* from Mr. Cuming which has been lately described at Paris under the name of *Voluta rossiniana*. It has a large nucleus, with a large rounded apex of regular smooth-edged whorls. It will be called in the Museum *Scapha rossiniana*.

I have also seen a young *Volute* from New Zealand, which is very like *Volutella papillosa*; but the shell shows no sign of the expanded mantle, which may only be expanded in the adult state of the animal. It differs from the specimen of *V. papillosa* in the British Museum in the nucleus being shorter and of fewer, only one and a half, whorls, though it agrees with those shells in the apex being rather excentric, and the outer edge of the upper or apical whorl being blackish.

The shell is much more ventricose, and the spire shorter, than in the usual form of *V. papillosa*. It may be only a variety of that species, but other specimens are wanting to determine this point.

9. DESCRIPTION OF SOME NEW RECENT ENTOMOSTRACA FROM NAGPUR, COLLECTED BY THE REV. S. HISLOP. BY W. BAIRD, M.D., F.L.S., ETC.

(Annulosa, Pl. LXIII.)

The *Entomostraca* now about to be described were taken from some freshwater pools at Nagpur, and placed in my hands by the

Rev. Mr. Hislop. It is interesting to find two species of *Cypris* in a recent state, that had been already described as fossil. The three species here figured are all true *Cypris*, the animal in all of them having the pediform antennæ provided with the bundle of long setæ which characterize the genus.

*ESTHERIA HISLOPI*, Baird. (Pl. LXIII. fig. 1.)

*Animal*.—Head large, prolonged anteriorly into a beak of considerable size, which is rounded at the extremity, and toothed on its upper edge. The first three or four teeth are very distinct, they then become smaller and less distinct; they are very numerous. Eye large, compound. Superior antennæ or rami thick, rather short, composed of two branches, each of which consists of seven articulations only; each articulation, close to the joint, is armed with short spines, and the last two or three possess longer setæ. Antennules long, nearly half the length of superior antennæ, rather slender, composed of four joints, the last joint rather club-shaped; all destitute of setæ. Tail large, armed with seven or eight pairs of strong, slightly curved hooks; the first pair are long, serrated on the edges; the second pair, near the root, armed with about ten rather stout spines. Mandibles strong, fleshy.

*Shell*.—Carapace nearly orbicular; umbo prominent; margins quite round. Altogether the shell very closely resembles that of the genus *Artemis* or *Dosinia* amongst the Mollusca. Shell surrounded with six or seven concentric ridges; the surface between them, when magnified, is seen to be pitted or marked with very numerous, small, close-set dots or punctures. When dry, it is of a clear, polished, shining appearance.

*Hab*. Freshwater pools at Nagpur (*Rev. S. Hislop*).

*Mus*. Brit.

*CYPRIS SUBGLOBOSA*, Sow. (Pl. LXIII. fig. 2.)

The shell is of a green colour, and the surface is strongly punctured, the pattern resembling the depressed punctures of a thimble. The anterior extremity is somewhat broader than the posterior, and when seen from the inside appears as it were double, the external edge of the carapace being produced beyond the true margin of the shell. The lateral portion of the carapace is very prominently swollen or gibbous. The dorsal margin is convex; the ventral is concave and sinuated.

*Hab*. Freshwater pools at Nagpur (*Rev. S. Hislop*).

*Mus*. Brit.

This species appears to be identical with *C. subglobosa* of Sowerby, which was found by my old friend the late John Grant Malcolmson, Esq., in the district of the Sichel Hills, the geology of which he has described at length in the fifth volume of the Transactions of the Geological Society, 2nd series. It was described shortly by Mr. J. de C. Sowerby at the end of Malcolmson's paper, in these words:—"Subglobose, triangular, inflated; front concave; outer surface is punctured." It was found in grey chert, with a species of *Unio* (*U*.



*deccanensis*), &c., and in indurated clay with *Gyrgonites*, *Paludina*, *Physa*, and *Lymnaei*.

CYPRIS CYLINDRICA, Sow. (Pl. LXIII. fig. 3.)

The shell is of a green colour, somewhat mottled. It is cylindrical in shape; the anterior margin rounded; dorsal margin slightly convex till it approaches the posterior extremity, when it suddenly slopes down, and is there bluntly pointed. The ventral margin is slightly sinuated in the centre. The valves are somewhat gibbous on their lateral portion. Internally, we see near the anterior margin a kind of shelf, which extends across that portion of the shell, and is hollow underneath it—exactly resembling the shelf we see in the shells of the genus *Crepidula*. The surface of the carapace is very minutely and slightly punctate. The edge of the ventral margin of the carapace, both inside and outside, appears thickened, which thickening, as seen on the inside of the shell, extends to the commencement of the dorsal margin at either extremity, and there the shell both internally and externally is strongly and regularly ridged.

*Hab.* Along with *C. subglobosa* in pools at Nagpur (*Rev. S. Hislop*).

*Mus.* Brit.

This species appears to me to be identical with *C. cylindrica*, described by Mr. Sowerby at the end of Mr. Malcolmson's paper on the "Geology of the Sichel Hills," mentioned above. It was found along with *C. subglobosa* in chert and indurated clay, along with *Unio deccanensis*, *Gyrgonites*, *Paludina*, *Physa*, and *Lymnaei*. The chief difference consists in the recent shells being so slightly punctured on the surface as to appear nearly quite smooth. Mr. Sowerby thus describes it:—"Twice as wide as long, almost cylindrical; front very slightly concave; the outer surface, which is very rarely obtained, is punctured."

CYPRIS CYLINDRICA, Sow., var. MAJOR, Baird. (Pl. LXIII. fig. 4.)

The chief difference in this variety consists in its larger size, being about double in all its dimensions. The typical or smaller variety described above might at first sight appear to be merely the young; but an examination of a large series of that species shows them to be completely adult shells. The internal shelf, the thickening of the edges of the ventral margin, and the ridges on that margin, are all indicative of a full-grown and adult shell.

The colour of the shell of this variety is almost exactly the same as the typical variety; the form is the same, but the shelf is rather larger, and there is some slight indication of a shelf at the posterior extremity also.

*Hab.* Along with the preceding (*Rev. S. Hislop*).

*Mus.* Brit.

CYPRIS DENTATO-MARGINATA, Baird. (Pl. LXIII. fig. 5.)

Shell rounded-oval, swollen, smooth, of a light greenish colour,



with a polished shining surface. Anterior extremity slightly narrower than posterior; dorsal margin somewhat convex; ventral margin nearly straight or slightly sinuated. Seen from the inside, the shell near each extremity is toothed, or marked with a series of small projections, like the teeth of a saw.

*Hab.* Pools at Nagpur (*Rev. S. Hislop*).

*Mus.* Brit.

[P.S. Since the above was written, I have had my attention called by Mr. Hislop, through my friend Mr. T. Rupert Jones, to a paper by Mr. H. I. Carter, in the 'Geological Papers on Western India, 1857,' in which the author mentions some of the recent *Entomostraca* found in the freshwater deposits of Bombay, and of which he gives an outline sketch in the Atlas accompanying the volume. These Mr. Carter considers as "the corresponding forms" of the fossil species mentioned by Mr. Malcolmson and described by Mr. Sowerby; but he does not attach any name to them.

In plate ix. of that Atlas, the species figured No. 19 is, without doubt, the same as what I consider to be the *Cypris cylindrica*, var. *major*, of this paper; and the species figured No. 18 is evidently identical with the *Cypris subglobosa* described and figured in this paper also. The third species, figured No. 20, differs from any of those collected by Mr. Hislop.—W. B.]

10. NOTES ON THE HABITS OF TWO MAMMALS OBSERVED IN THE SOMÁLI COUNTRY, EASTERN AFRICA. BY CAPTAIN J. H. SPEKE, 46TH B.N.I.

The curious Rat discovered by me during my expedition into the Somáli country, and named by Mr. Blyth *Pectinator spekii* (Journ. As. Soc. Beng. xxiv. p. 294), inhabits the large cellular blocks of lava on the sea-face side of the northern Somáli sea-coast range (lat. 9° N. and long. 47° E.). Several frequent one block, from which they emerge on all sides at the same time, sit up like Squirrels, and feed from their fore paws. From their general appearance and size, with grey coating, bushy tails, and jerking hurried action, one is much struck with their close resemblance to the Giléri, or common Squirrel of India.

They run in and out of these cells much in the way that the Marmot and other stony-mountain Rats quit and re-enter their abodes on the approach of any suspicious looking object, more especially if that be man.

Their habits are quite different from that of the *Hyrax* (*Hyrax habessinicus*), which is also found in great quantities about those hills. This animal climbs into and lies about in the branches of bushes or small trees, but usually inhabits the rocky ledges and chinks as described in the Journal As. Soc. Beng. xxiv. p. 296. I have seen it as far south as 5° south lat.

11. ON A COLLECTION OF BIRDS FROM VANCOUVER'S ISLAND.  
 BY PHILIP LUTLEY SCLATER, M.A., F.L.S., SECRETARY TO  
 THE SOCIETY.

Dr. Acland of Oxford has kindly placed in my hands for examination a small collection of birds made by Capt. Prevost, R.N., of H. B. M. Ship 'Commissioner,' in Vancouver's Island. Though the species are not numerous and are all known, as this is, I believe, the first series of Birds that has been brought to England from a colony which is now attracting so much attention, I have thought that their names would be worthy of record. I accordingly subjoin a list of them, adding a few notes on their previous history and geographical distribution.

1. *TURDUS MIGRATORIUS*, Linn.

Several specimens, including the young bird just from the nest.

2. *SIALIA MEXICANA*, Sw.

Several specimens.

3. *REGULUS SATRAPA*, Licht.

One example.

4. *CERTHIA AMERICANA*, Bp.

Seems to be rather shorter in the wings than eastern specimens.

5. *VIREO* —?

An imperfect specimen of the section with the first spurious primary, which I am unable to refer to any described species.

6. *HIRUNDO THALASSINA*, Sw.

One specimen, not quite in full plumage.

7. *HELMINTHOPHAGA CELATA* (Say); Baird, Rep. p. 257.

Two examples.

8. *ZONOTRICHIA GAMBELLI* (Nutt.); Baird, Rep. p. 460.

Two specimens seem to present the character of the continuous superciliaries, which Professor Baird has noted as the only difference between this species and *Z. leucophrys*.

9. *SPIZELLA SOCIALIS* (Wils.).

10. *MELOSPIZA FALLAX*, Baird, Rep. p. 481?

11. *PIPILO OREGONUS*, Bell.

12. *XANTHOCEPHALUS ICTEROCEPHALUS* (Bp.).

13. *STURNELLA NEGLECTA*, Aud., Baird, Rep. p. 537.

14. *CYANURUS STELLERI* (Gm.).

I have not yet met with specimens, which I can certainly refer to Prof. Baird's *C. macrolophus*, but I possess examples of two other allies of the present species—*C. diadlematus* from the Table-land of Mexico, and *C. coronatus* from Southern Mexico and Guatemala.

15. *CERYLE ALCYON* (Linn.).

Several specimens.

16. *NEPHÆCETES BOREALIS* (Kennerly).—*N. niger*, Baird, Rep. p. 142.—*Cypselus borealis*, Kennerly.

I am much pleased at being able to handle a specimen of this fine Swift from Vancouver's Island, and to compare it with examples of Gosse's *Cypselus niger* from Jamaica in my own collection. Prof. Baird is right in saying that the difference between specimens of these birds is small, yet I am not quite convinced of their specific identity. The bird of the Antilles is smaller in every part, there seems to be a considerable difference in the breadth of the skull, and the northern bird has much more of the fine white edging to the feathers of the face than is found in the southern species, and is generally browner and not so dark in colouring. I am inclined on the whole to think that the birds may yet prove to be distinct.

17. *HYLOTOMUS PILEATUS* (Linn.); Baird, Rep. p. 107.18. *PICUS GAIRDNERI*, Aud.19. *SPHYROPICUS RUBER* (Gm.); Baird, Rep. p. 104.20. *COLAPTES MEXICANUS* (Sw.).21. *TINNUNCULUS SPARVERIUS* (Linn.).22. *COLUMBA FASCIATA*, Say.23. *TETRAO OBSCURUS*, Say.

This bird appears to be the *Tetrao obscurus* of Say, and the species generally known and described under that name. The tail has a broad terminal band of pale slate-colour, and I can hardly believe that the bird figured in 'Northern Zoology' (pl. 59), in which, besides other differences, the tail is described and figured as uniform black, can belong to this same species\*.

24. *BONASA SABINII*, Douglas; Baird, Rep. p. 631.25. *OREOORTYX PICTUS* (Douglas); Baird, Rep. p. 642.26. *APHRIZA VIRGATA* (Gm.).

I believe there can be no doubt about the occurrence of this bird

\* Sir William Jardine has already expressed this opinion in letters to myself and in a note in the 'Edinburgh Philosophical Magazine' for April 1859.

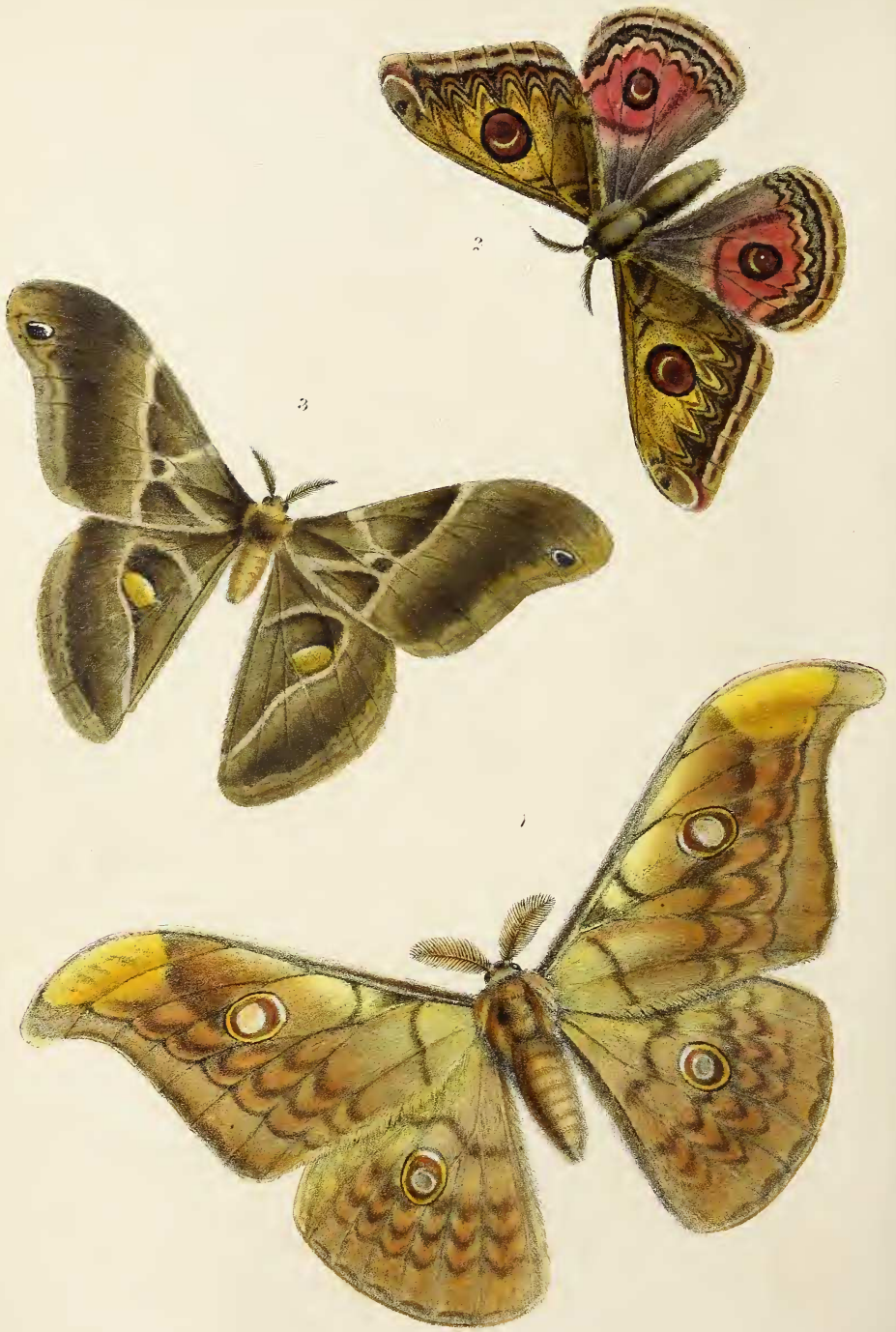






1. *Antheraea Roylii* Moore. 2. *Anth. Helfer* Moore.





1. *Antheraea Prithi* Moore. 2. *Saturnia Grotel* Moore. 3. *Attacus Guerini* Moore.

on the shores of the Northern Pacific. Besides the present example, specimens are in the British Museum from the same country. Prof. Baird, in his 'General Report' (p. 698), seems hardly satisfied on this point.

27. *MACRORHAMPHUS GRISEUS* (Gm.).
28. *GAMBETTA MELANOLEUCA* (Gm.).
29. *TRINGA WILSONI*, Nutt.; Baird, Rep. p. 721.
30. *TRINGA* — ?
31. *QUERQUEDULA CYANOPTERA* (Vieill.).
32. *QUERQUEDULA CAROLINENSIS* (Gm.) ♀.
33. *MERGUS CUCULLATUS* (Linn.).
34. *LARUS BELCHERI*, Vigors, Zool. Journ. iv. 358.—*Larus heer-  
manni*, Cassin?
35. *BRACHYRHAMPHUS MARMORATUS* (Gm.); Baird, Rep. p. 915.  
An adult and two younger specimens.

SYNOPSIS OF THE KNOWN ASIATIC SPECIES OF SILK-PRODUCING  
MOTHS, WITH DESCRIPTIONS OF SOME NEW SPECIES FROM  
INDIA. BY FREDERIC MOORE, ASSIST. MUSEUM, INDIA  
HOUSE.

(Annulosa, Pls. LXIV., LXV.)

In the following list we have endeavoured to give descriptions of those species of silk-producing Moths that are known to inhabit India, its adjacent countries and islands, and to bring together such information (so far as our present materials will allow) relating to each individual species, as may prove interesting, and, we trust, useful, not only to the Oriental entomologist, but also to those gentlemen, in India and elsewhere, who devote their attention to the advancement of the productive resources of the silk trade.

#### Genus BOMBYX, Schrank.

*Bombyx*, Schrank, Fauna Boica, ii. pt. 2. p. 150 (1802).

*Phalæna-Bombyx*, pt., Linnæus.

*Bombyx*, pt., Fabricius.

*Sericaria*, pt., Latreille.

#### 1. BOMBYX MORI (Linnæus).

*Phalæna-Bombyx mori*, Linnæus, S. N. i. 2. p. 817 (1767); Amcæn. Acad. iv. p. 563; Faun. Suec. p. 832; (Aldrovand, Ins. p. 280; Albin, Ins. pl. 12. f. 16; Réaum. Ins. ii. pl. 5. f. 2; Roësel, Ins. iii. pl. 7, 8).



*Bombyx mori*, Fabricius, Spec. Ins. ii. p. 180; Mant. Ins. ii. p. 114; Ent. Syst. iii. i. p. 431; Godart, Lép. de France, iv. p. 153. pl. 14. f. 3, 4; Helfer, Journ. Asiatic Soc. Beng. vi. p. 40; Walker, List Lep. Het. Brit. Mus. pt. 6. p. 1505; Royle, Report on the Paris Universal Exhib. pt. 3. p. 216; Moore, Catal. Lep. Mus. India House, ii. p. 374.

*Sericaria mori*, Blanchard, Gay, Hist. de Chile, Zool. vii. p. 55.

*The Common Domestic, or Chinese Silkworm Moth.*

*Pat of Bengal*, Royle.

*Hab.* China (domesticated in China, Siam, India, Persia, France, Italy, &c.).

In a 'Dissertation on the Silk Manufacture and the Cultivation of the Mulberry,' translated from the Chinese works of Tseu-kwang-k'he, called also Paul Siu, a Colao, or Minister of State in China, and recently published at Shanghæ, and reprinted in 1858 at Madras, it is stated, that "the earliest allusion to the mulberry and silk met with in the ancient writings of the Chinese is in the Historical Classic, a work which existed before the days of Confucius, because it is quoted by him, and which embraces the history of China from B.C. 2356 to B.C. 722, a period of 1634 years. In the former part of that period, we have the allusions referred to, recorded in the section called the tribute of Yû, who flourished 2200 years before Christ. In his days the mulberry is spoken of as a well-known production, and silk as obtained therefrom; so that it must have been discovered before his days. The usual tradition is, that it was discovered during the reign of Hwàngté (B.C. 2640) by his queen." The passages in the Historical Classic in which references to the mulberry and silk are made are as follows:—In giving an account of Yen-chow, the south-western part of the modern Shan-tung, the writer says, "The mulberry region having been supplied with silkworms, the people descended from the hills, and dwelt in the plains." On this the commentator remarks:—"The nature of the silkworm is to abhor dampness; hence it was not till the waters were abated that the silkworms could be reared. The nine regions of China equally depended upon this source of wealth; but the Yen province alone is mentioned, because it was best adapted for the mulberry." The Classic goes on to say that the tribute of Yen-chow consisted in varnish and silk, while their tribute-baskets were filled with wove stuffs of various colours (see translation of the Shoo-king, pp. 91, 92). In speaking of the production of Tsing-chow, the north-eastern part of Shan-tung, the Classic says that "from the valley of the Taé mountain they brought silk and hemp; while their tribute-baskets were stored with the wild mulberry and silk." The silk produced from the mountain mulberry is said by the commentator to be so tenacious, that it was peculiarly adapted for harps and guitars (see translation of the Shoo-king, p. 93).

Black silk and chequered sarcenets are spoken of as the production of Tseu-chow, the southern part of Shan-tung and the northern part of Këang-soo (see translation of the Shoo-king, p. 96).

The productions of King-chow, the modern Hoôk-wang, where silk

has since been cultivated to a great extent, are spoken of as consisting of black and red silks, with silk fringes (see translation of the *Shoo-king*, p. 101).

The next Classic in which we find any reference to the silkworm is the *Chow-le*, or Account of the Ceremonies of the Chow dynasty, where it is said that "the officer who adjusted the price of horses forbade the people to rear a second breed of silkworms in one season," because, in accordance with the views of astrologers, the horse belonged to the same constellation with the silkworms, and they were therefore considered of the same origin. Conceiving that two things of like nature could not prosper at the same time, the Chinese forbade the rearing of the second breed of silkworms, lest it should be of some disadvantage to the horses. However absurd this notion, it shows, at the least, that the rearing of silkworms was a common practice at that period.

After this we meet with frequent references to this subject in the *Le-ke Book of Ceremonies*. This book was written partly in the Tsin dynasty (B.C. 204) and partly in the Han dynasty (B.C. 135), and gives an account of the ceremonies observed by the Chinese in very early antiquity. In the 6th section of this work, entitled *Yue-ling*, we meet with the following directions:—

"In the first month of spring, orders were issued to the forester not to cut down the mulberry-trees; and when the cooing doves were observed fluttering with their wings, and the crested jays alighting upon the mulberry-trees, people were to prepare the trays and frames, &c., for the purpose of rearing the silkworms.

"In the spring season, when the empress and her ladies had fasted, they proceeded to the east, and personally engaged in picking the mulberry leaves; on this occasion the married and single ladies were forbidden to wear their ornaments, and the usual employments of females were lessened, in order to encourage attention to the silkworms. When the rearing of the silkworms was completed, the cocoons were divided (for reeling), and the silk weighed (for weaving), each person being rewarded according to her labour, in order to provide dresses for the celestial and ancestral sacrifices: in all this none dared indulge in indolence."

From another passage of the same section we learn that in "the last month of summer the order was given to the female officers to dye the silk of various colours, in order to weave chequered sarcenets, comprising black and white, black and green, green and red, with red and white checks! All which was to be done according to the ancient rule, without the least variation; the black, yellow, azure, and red tints were all to be correct and good, without the least fault; in order to provide dresses for the celestial and ancestral sacrifices, and standards for distinguishing the high and low degrees."

In the 24th section of the same book, on sacrificial rites, we read, that "in ancient times the emperor and his princes had a public mulberry-garden, and a silkworm establishment, erected near some river. On the morning of the first day of the third month of spring, the sovereign, wearing a leather cap and a plain garment, ascertained

by lot the chief of his three queens, with the most honourable amongst his concubines, and caused them to attend to the rearing of the silkworms in the above-named establishment. They then brought the eggs of the worms and washed them in the river above alluded to, after which they picked the mulberry leaves in the public garden, and aired and dried them, in order to feed the worms.

"When the season was over, the royal concubines, having completed the business of rearing the silkworms, brought the cocoons to show them to the prince, when he presented the cocoons again to his consort; whereupon his consort said, 'This is the material of which your highness's robes are to be formed.' Having said which, she covered herself with her robe, and received the cocoons. On this occasion the ladies of the court were honoured with the present of a sheep. This was the mode in which the presentation of the cocoons was anciently conducted."

Hawae-nan-tsze in the *Silkworm Classic*, says, that "Se-ling-she, the principal queen of Hwang-te (B.C. 2640), was the first to rear silkworms; and the Hwang-te was induced to invent robes and garments from this circumstance. Afterwards, when Yu regulated the waters (B.C. 2200), mention is made in his work on the tribute, of the land adapted for the mulberry-tree having been supplied with 'silkworms,' from which time the advantage thereof gradually increased. In the Yue-ling section of the *Le-ke*, it is said that in the last month of spring, the trays and frames, with the square and round baskets, were to be got in readiness for the rearing of the worms, &c. It appears, on examination, that the queens and wives of the nobles, through successive generations, personally attended to the rearing of the silkworms; how much more, then, ought the wives of the common people to busy themselves in the same! All this alludes to what was done in the Chow dynasty, B.C. 1000. It is recorded of Wán-te, of the former Hàn dynasty (B.C. 150), that he commanded his empress personally to attend to the picking of the mulberry leaves in order to prepare the sacrificial garments. King-té (B.C. 130) enjoined the same thing on his queen, that she might be an example to the empire. In the time of Yuên-té (B.C. 20) the empress-dowager Wang visited the silkworm establishment, leading on the empress and the different ladies of the court, to gather mulberry-leaves. In the time of Ming-té (A.D. 70) the empress with the ladies of the princes attended to the rearing of the silkworms. During the Wei dynasty, in the reign of Wán-té (A.D. 250), the empress attended to the silkworms at the northern border, according to the regulations of the Chow dynasty. During the Tsin dynasty, in the reign of Woó-té (A.D. 280), the silkworm palace was built, and the empress personally attended to the business of rearing the silkworms, as had been the practice during the two preceding dynasties. During the Sung dynasty, in the reign of Heaóu-woó (A.D. 460), the silkworm monastery was built, and the empress personally gathered the mulberry-leaves, as had been the practice in the preceding dynasty.

"In the northern Tsê dynasty (A.D. 490) a silkworm palace was

erected, and the empress went in person to gather the mulberry-leaves. According to the regulations of the Sûy dynasty (A.D. 620), the empress went to the appointed place to gather the mulberry-leaves. During the Tâng dynasty, in the reign of Chin-kwan (A.D. 650), the empress did the same; in the first year of the following monarch Hëèn-k'hing (A.D. 655), and in the reign of Këen-yuen (A.D. 747), the empresses all attended to the silkworm ceremony. At the same time a decree was issued, requiring that the silkworms should be fed in the palace, when the empress went in person to inspect them. During the Súng dynasty, in the reign of K'hae-paou (A.D. 960), on recording the ceremonies performed at the celestial sacrifice, the prayer is given which was offered when the empress went in person to rear the silkworms. From all which we perceive that the empresses through successive dynasties attended in person to the business of rearing the silkworms. By selecting these extracts from the historical documents, we have set this matter in a very clear light, and placed the whole at the head of our treatise."

The Essay from which the preceding extract has been made contains many other interesting details, showing the importance attached in the earlier periods of Chinese history to the manufacture of silk generally, and especially to the cultivation of the mulberry in its various modifications.

"The culture of the mulberry silkworm" (*Bombyx mori*), remarks Dr. Royle \*, "was early introduced into India from China, where it flourishes chiefly about Nankin, or in 32° of north latitude; but in India none of the old silk filatures extend to beyond 26° of north latitude. This can, I conceive, be ascribed only to the excessive heat and dryness of the north-western provinces of India being unsuitable to the animal, besides producing a dryer and harder leaf than it likes for its food."

The Rev. W. Fox, Curate of West Malling, Kent †, records the fact of *Bombyx mori* having been found in a wild state in England, and gives the following remarks:—

"On the 10th July 1858, a number of silkworms, estimated at from 80 to 100, were found under a hedge in a place called Banksfield, near West Malling, not far from Maidstone, Kent. There was no appearance of the insects having been scattered accidentally in the place, but, on the contrary, every indication of their having been hatched and sustained for some time in the spot where they were discovered. The leaves of several plants in the immediate vicinity were much eaten, showing plainly that the larvæ had for some time been feeding upon them. A bush of the common Bramble (*Rubus fruticosus*), among others, had been partially despoiled of its leaves. When discovered, about three-fourths of the whole number had spun their cocoons, which were hanging in all directions upon the weeds and the bramble referred to. Some were just commencing the spinning process, while others were yet in the larva state, and were feeding

\* Report on the Paris Universal Exhibition, pt. 2. p. 216.

† See 'Athenæum' for October 16th, 1858.



quietly or roving about in quest of suitable places in which to construct their silken cells. Both the silk cocoons and the remaining larvæ were subjected to a close examination by the aid of a microscope, and were compared with other silkworms and cocoons, which had been bred or formed under the shelter of a house, but no perceptible difference of species could be discovered."

## 2. BOMBYX RELIGIOSA (Helfer).

*Bombyx religiosa*, Helfer, Journ. Asiatic Soc. Bengal, vi. p. 41. pl. 6 (1837); Walker, List Lep. Het. Brit. Mus. pt. vi. p. 1506.

*The Deo-mooga Silkworm*, Hugon, J. A. S. Beng. vi. pp. 32-41.

*The Joree Silkworm*, Helfer.

*Hab.* Assam (*Capt. Jenkins*); Cachar (*Hugon*).

*Remark.*—Upon examination of typical specimens of *B. huttoni*, and comparing them with the description of Dr. Helfer's *B. religiosa*, I am rather inclined to believe them to be one species.

"The Deo-Mooga," says Mr. Thomas Hugon\*, "I accidentally became acquainted with, and it is very little known to the natives, and entirely in the wild state. Three years ago, being employed in Jumna-Mukh (Cachar), I had occasion to take some bearings, for which purpose I had a white cloth put up on a large Bur-tree (*Ficus indica*); the year after, being near the same spot, the ryots came and told me that two months after I left (April) they observed that the tree had lost all its foliage; they went to it and found in the surrounding grass and dry leaves a large number of small cocoons; these they spun like the *Eria* out of curiosity, and used it with the latter. They took no further notice of succeeding breeds, finding the thing of little present use. I lost a few cocoons which I procured at the time, but have lately seen both the worm and the cocoon. The former is quite different from any other; it is more active, its length is under  $2\frac{1}{2}$  inches, the body very slender in proportion to its length, the colour reddish and glazed. I could not observe them more particularly, as they were brought to me one evening at dusk: I put them in a box with the intention of examining them the next morning, but they disappeared in the night, although the box was open very little to admit the air. The moth is very much like that of the mulberry; so is the cocoon also in appearance, colour, and size. I have questioned many natives about this worm, but none had ever seen it before."

Capt. F. Jenkins discovered this species in Assam, which "is (says Dr. Helfer) very interesting, as it yields a silk, if not superior, yet certainly equal, to that of *B. mori*. The cocoon shows the finest filament, and has very much silky lustre. It is exceedingly smooth to the touch, and very different from the cocoon of the mulberry moth. The worm lives upon the Pipul-tree (*Ficus religiosa*). Its general introduction would be very easy, as the Pipul-tree grows abundantly over all India."

\* J. A. S. Beng. vi. p. 32 (1837).

3. *BOMBYX HUTTONI* (Westwood).

*Bombyx Huttoni*, Westwood, Cabinet, Orient. Ent. p. 26. pl. 12. f. 4 (1847); Walker, List Lep. Het. Brit. Mus. pt. 6. p. 1506; Moore, Catal. Lep. Mus. India House, ii. p. 379.

*Hab.* Mussooree (*Hutton*).

"This species," says Capt. Hutton, "is an inhabitant of these hills (Mussooree), occurring abundantly from the Doon upwards to at least 7000 feet; and the caterpillar, like that of *B. mori*, feeds on the leaves of the wild mulberry which grows here in our forests. Unlike the larva of *B. mori*, however, the present species has the caterpillar covered with long spines, although in colouring and shape there is great similarity between the two. The cocoon is spun in the leaf, which is drawn round it, and the silk is very fine and of a very pale yellow tint. I discovered this species on the 7th May 1842, on some mulberry trees growing at an elevation of about 6500 feet above the sea, with a southern aspect. Some of the caterpillars were of a large size, and nearly full-grown at this time, whilst others were in all their intermediate stages of growth. The caterpillar is of a pale yellowish cream-colour, mottled or marbled down the back and sides with a mixture of grey, yellow, and rufous or brownish lines; the anterior segments of the body are mottled above with livid grey, and ornamented with four blackish oblong spots or ocelli placed obliquely; along the back are two rows of long black spines curving backwards, and on the anal segment is one long spine in the middle; the two anterior pair of spines spring from the ocelli, and the last pair are curved forwards, instead of backwards, like the rest; there is also on each side a row of short spines springing from the base of the true legs. The anterior segments swell up into a hump like those of the larva of *B. mori*. As the caterpillar becomes mature, the rufous colouring fades away and gives place to a mottling of pale livid grey; the head is also mottled. It grows to about  $2\frac{1}{2}$  inches in length, and spins in the leaf early in May. They are double brooded, for mine all hatched in June, and deposited their eggs, a few of which produced caterpillars that year, but the greater number remained until the following spring." — *Westwood's 'Cabinet of Oriental Entomology.'*

Capt. Hutton, in reply to some inquiries by J. Bashford, Esq., relating to this species, states\* that "*Bombyx huttoni* cannot be treated like the domestic kinds, but must (at least for the present) be reared upon the trees. The worms will not remain in the trays, nor even upon twigs placed in water, when once the freshness of the leaf is gone. On the tree it is perfectly free from restlessness, and saves a vast expense in feeding, besides possessing the advantage of always having perfectly fresh food at command, — an essential point in forming good silk, as the quality of this substance must always be greatly influenced by the healthy secretions of the animals producing it.

\* Journ. Agri-Horticult. Soc. India, ix. p. 391 (1857).

"Cocoons of *B. huttoni*, produced in the house from worms placed upon small branches set in jars of water to keep them fresh, are always inferior to those produced upon the trees, and I doubt not you would find this to be the case with the domestic species in Bengal."

The Agri-Horticultural Society of India has lately reported most favourably on the silk of this species, which has been brought into notice by Capt. Hutton. The worm spins in all weathers, whereas the common silkworm, *B. mori*, is apt to be thrown off work by a passing cloud. It is thought that this new silkworm may prove commercially important, and Government is solicited to institute experiments regarding its productive powers (*vide* 'Madras Journal,' March 1857, p. 268).

#### 4. BOMBYX HORSFIELDI (Moore).

*Bombyx horsfieldi*, Moore, Catal. Lep. Mus. India House, ii. p. 380. pl. 11 a. fig. 5 (1858).

*Hab.* Java. In Museum, India House.

This species, of which a female only was collected in Java by Dr. Horsfield, is of a brownish-grey colour. The fore-wings have two transverse, slightly curved, brown bands, the first one-third from the base, the other one-third from the apex, the latter having undulated margins; between the two bands is a grey-centred brown discal spot; a brown streak immediately below the apex, its inner margin being pale. The hind-wing is pale ferruginous at the base, and has a narrow curved pale submarginal line, the veins being also pale; and on the abdominal margin are two blackish-brown spots, one being near its base, the other about its middle. Expanse  $2\frac{3}{4}$  inches.

#### 5. BOMBYX SUBNOTATA, Walker.

*Bombyx subnotata*, Walker, Journ. Proc. Linn. Soc. Lond. iii. Zool. p. 188 (1859).

"Male. Ferruginous, thick, pilose. Fore-wings rounded at the tips, extremely oblique along the exterior border, which is slightly angular in the middle and slightly excavated on each side; underside with a yellow costal spot near the tip. Hind-wings with the interior border densely fringed towards the tip. Antennæ broadly pectinated. Mouth obsolete. Abdomen much more slender than the thorax, not extending beyond the hind-wings; anal lateral appendages fringed. Legs short, stout. Expanse of the wings 16 lines; length of the body 7 lines."

*Hab.* Singapore.

This species was collected by Mr. A. R. Wallace.

#### 6. BOMBYX LUGUBRIS (Drury), Exot. Ins. iii. p. 28. pl. 21. f. 5 (1773).

Described as inhabiting Madras; requires further confirmation before we can say that it belongs to the genus *Bombyx* (as now re-

stricted). To us it appears like a species belonging to a genus of *Drepanulidæ* \*.

### Genus CRICULA, Walker.

*Cricula*, Walker, List Lep. Het. B.M. pt. 5. p. 1186 (1855).

*Euphranor*, Herr.-Schäffer, Lep. Exot. Spec. Nov. p. 61 (1858).

Antennæ in male deeply bipectinated, in female minutely so. Palpi pilose, very short. Proboscis short, distinct. Legs stout, pilose; tarsi short, thick; hind tibiæ with two minute apical spurs. Abdomen short, thick. Wings broad; fore-wing in the male slightly convex along the costa, falcate at the tip, concave along the exterior margin, inner angle rounded; hind-wing shorter, rounded at the angles. Female with the tip of fore-wing less falcate, and the exterior margin nearly straight.

#### 1. CRICULA TRIFENESTRATA (Helfer).

*Saturnia trifenestrata*, Helfer, Journ. As. Soc. Beng. vi. p. 45 (1837); Herr.-Schäffer, Lep. Exot. Spec. Nov. ser. 1. pl. 17. f. 80 ♀.

*Cricula trifenestrata*, Walker, List Lep. Het. B.M. pt. 5. pp. 1187, 1196; Moore, Catal. Lep. Mus. India House, ii. p. 384.

*Euphranor trifenestrata*, Herr.-Schäffer, Lep. Exot. Spec. Nov. p. 61 (1858).

♂ *Saturnia zuleika*, Westwood, Cabinet Orient. Ent. p. 25. pl. 11. f. 1 (1847).

*Antheræa zuleika*, Walker, List Lep. Het. B.M. pt. 5. p. 1252.

\* "Silk is entirely a gum or glutinous substance," says Mr. F. Bashford. "I have extracted it from many hundred worms in every stage. It is deposited in both sides of the worm in two cylindrical shapes, doubled into three layers or folds, thick in the middle, and tapering at both ends, but much more so at the latter end, which accounts for the end of the cocoon giving a thread of a finer and lighter colour. The gum, if instantly taken from the worm, may be pressed and moulded into various shapes, and is very elastic: but very slight exposure gives strength to it, and fixes the thread in the ratio of the cylinders, large in the centre and tapering at the ends. If you expose it to a hot sun, the softer and colouring gummy matter becomes brittle, and may be broken off or separated, leaving the fixed gum in the shape of a thick white thread, strong (if not too much exposed to the sun), and slightly elastic. At the time of spinning, the two cylinders unite in one aperture, and the gummy matter is exuded by the worm in one continued thread; the more sticky nature of the soluble portion fixes the thread to the twigs at first, and ultimately to each other in the formation of the cocoon; the motion of the head of the worm causes it to be drawn out from the cylinders; the peculiar nature of the worm's secretion and the motion of the head enables it to elongate the silky gum, as it is drawn from the body in a soft state, into a thread of considerable length; exposure immediately hardens and fixes it, but it can only be done by the aid of the outer stick (? sticky) and more soluble gum. The two gums, or animal secretions, differ most materially: the one must be boiled out with a solution of alkali, before the other will take a perfect dye; but this solution does not injure the fixed gum or silk thread; a more powerful chemical is necessary to render that soluble; it is soluble, and art may make old silk dresses available some day for weaving and converting into a new fabric, as our Yorkshire friends now do with old woollen cloth rags."—(Extracted from the 'Journal of the Agricultural and Horticultural Society of India,' 1857, ix. p. 269.)



? *Phalæna-attacus fenestrata*, Linnæus, Syst. Nat. i. pt. 11. p. 811 (1767); Mus. Lud. Ulr. 372; Clerck, Icon. pl. 55. f. 1.

? *Phalæna-attacus perspicua*, Linnæus, S. N. i. 11. p. 811.

Var. ♀. *Euphranor multifenestrata*, Herr.-Schäffer, Lep. Exot. Spec. Nov. f. 551. p. 61 (1858).

Hab. N.E. and S. India, Silhet, Assam, Burmah, Java.

The larva, chrysalis, and cocoon of *C. trifenestrata* are figured in the 'Catal. of Lepidoptera' in the Museum, India House, vol. ii. pl. 27. figs. 7, 7 a, 7 b, copied from the original drawings made under Dr. Horsfield's superintendence in Java. The larva (according to Dr. Horsfield) "feeds on the Teng-gulung (*Protium javanum*), the Ketos (*Canarium commune*), and the Ingas (*Mangifera ingas*?). Abundant during December and January; scarce in March."

The cocoon is of a beautiful yellow colour, and of a rich silky lustre, and constructed like network, the enclosed chrysalis being visible.

Discovered in Assam by Capt. Jenkins, "where it lives on the *Soon* tee, but seems to be not much used" (J. A. S. Beng. 1837, p. 46); and at Moulmein by Capt. J. C. Haughton, who states that he "only observed it upon the Cashew-nut tree (*Anacardium orientale*), which, though exotic, has thoroughly taken root both at Tavoy and at Moulmein, and is now to be found in every native garden (Journ. of the Agri-Horticultural Soc. of India, 1858, p. 101)."

Gen. nov. SALASSA, Moore.

*Antheræa* (Group III. pt.), Walker, List Lep. Het. B.M. pt. 5. p. 1250.

Antennæ deeply bipectinated. Abdomen short, rather thick. Wings broad; fore-wings *without ocelli*; fore-wing with costal margin convex towards the tip, where the angle is falcated; posterior angle round, inner margin somewhat straight; hind-wings *with ocelli*; the apex round, the anal angle less so.

*Remark*.—This genus, of which only one species is as yet known, may be distinguished from *Antheræa* by the absence of the ocellus in the fore-wing,—all the known species of *Antheræa* possessing a distinct but varying ocellus in *both* the fore and hind wings, whereas in *Salassa* it is replaced by a small diamond-shaped vitreous spot.

1. SALASSA LOLA (Westw.).

*Saturnia lola*, Westwood, Cabinet Orient. Ent. p. 25. pl. 12. f. 3 (1847).

*Antheræa lola*, Walker, List Lep. Het. Brit. Mus. pt. 5. p. 1252.

Wings rich brownish-red; fore-wing with an obscure transverse line near the base, a small diamond-shaped vitreous discal spot, followed by a transverse dark dentated line, beyond which is a greyish-brown fascia bordered on each side by a dark dentated line, and terminated at the apex in a grey patch; hind-wing paler at the base, with a black-centred ocellus, which is encircled by a white and then

by a red ring; around this runs a broad incomplete circular line, extending from above the ocellus and terminating on the abdominal margin; an exterior submarginal dark dentated line.

Expanse  $4\frac{1}{2}$  inches.

*Hab.* Silhet.

### Genus *ANTHERÆA*, Hübner.

*Antheræa*, Hübner, Verz. bek. Schmett. p. 152 (1816).

*Antheræa* (part), Walker, List Lep. Het. B.M. pt. 5 (1855).

*Phalæna-attacus*, pt., Linnæus.

Antennæ broadly bipectinated in male, less so in female. Proboscis invisible or obsolete. Abdomen stout, very thick in female. Wings ample, each with a rounded ocellus, whose disc is partly or wholly vitreous, and is traversed by the discal veinlet; fore-wing convex along the costa; tip falcated in the male, more rounded in the female.

#### 1. *ANTHERÆA PAPHIA* (Linnæus).

*Phalæna-attacus paphia*, Linnæus, S. N. i. 2. p. 809 (1767); Mus. Lud. Ulr. p. 369; Cramer, Pap. Exot. ii. pp. 78, 81, 82. pl. 146. f. a ♀, pl. 147. f. a, b ♀, pl. 148. f. a ♂.

*Bombyx paphia*, Fabricius, Syst. Ent. p. 557; Spec. Ins. ii. p. 168; Mant. Ins. ii. p. 108; Ent. Syst. iii. 1. p. 409; Sykes, Trans. Asiatic Soc. London, iii. p. 541 (with a plate).

*Phalæna paphia*, Roxburgh, Trans. Linn. Soc. vii. p. 33 (1804).

*Antheræa paphia*, Hübner, Verz. bek. Schmett. p. 152 (1816); Moore, Catal. Lep. Mus. Ind. House, ii. p. 385.

*Saturnia paphia*, Helfer, Journ. As. Soc. Beng. vi. p. 42 (1837).

*Phalæna-attacus mylitta*, Drury, Ill. Exot. Ins. ii. p. 8. pl. 5. f. 1, App. p. (1773).

*Bombyx mylitta*, Fabricius, Syst. Ent. p. 558.

*Attacus mylitta*, Blanchard, in Jacquemont's Voy. dans l'Inde, Zool. Ins. p. 24. pl. 3.

*Antheræa mylitta*, Hübner, Verz. bek. Schmett. p. 152; Walker, List Lep. Het. B.M. pt. 5. p. 1247.

*Saturnia mylitta*, Westwood, edit. Drury's Ins. ii. p. 10. pl. 5. f. 1; Royle, Reports on the Paris Universal Exhibit. pt. 3. p. 216; Guérin-Meneville, Rev. et Mag. Zool. (1855), p. 297. pl. 6. f. 2.

*Tesser*; *Folliculus et Eruca bengalensis*, vocatur *Tesser*, Rumphius, Herb. Amb. iii. p. 115 (1750).

*Tusseh Silkworm Moth*, Hind., Helfer.

*Bughy Silkworm Moth of the Burbhoom Hills*, Roxburgh.

*Kolisurra Silkworm Moth of the Mahrattas*, Col. Sykes.

*Munga Silkworm Moth of the Meches*, B. H. Hodgson.

*Kontkuri Mooga of the Assamese*, Hugon\*.

*Hab.* Difficult to determine; but specimens have been received from N.E. India, Silhet, Assam, S. India, Ceylon, and Java.

The transformations of the Tusseh Silkworm Moth are figured in

\* J. A. S. Beng. vi. p. 32.

vol. ii. Catal. Lep. Mus. Ind. House, on plate 29, fig. 1, 1 *a*, copied from the original drawings made by Lady Isabella Rose Gilbert.

Also figured among the drawings of the late Gen. Hardwicke.

One of the earliest notices of an insect, very nearly allied to this species, is given by the venerable Rumphius in his 'Herbarium Amboinense,' vol. iii. p. 113. pl. 75 (1750), who discovered the larva in Amboyna feeding on the *Mangium caseolare rubrum* (*Rhizophora caseolaris*, Linn.). The figures of the larva, cocoon, and imago, on Rumphius's plate, show its close affinity to the *Anth. paphia*.

Dr. Roxburgh states this to be the "*Bughy* of the natives of the Burbhoom Hills, where the silk, which the same people call *Tusseh*, is manufactured. It is a native of Bengal, Bahar, Assam, &c. Feeds upon the leaves of *Rhamnus jujuba* (Byer of the Hindoos) and of *Terminalia alata glabra*, Roxb. (Asseen of the Hindoos)."

They are found in such abundance, over many parts of Bengal and the adjoining provinces, as to have afforded to the natives, from time immemorial, an abundant supply of a most durable, coarse, dark-coloured silk, commonly called Tusseh-silk, which is woven into a kind of cloth called Tusseh-doot'hies, much worn by Brahmins and other sects of Hindoos.

Eggs white, which hatch in from two to four weeks. The larvæ acquire their full size, which is about 4 inches in length, and 3 in circumference, in about six weeks. When the larvæ approach their full size, they are too heavy to crawl in search of their food with the back up, as is usual with most caterpillars, but traverse the branch suspended by the feet. When the larvæ are ready to spin the cocoon, each of them connects, by means of the recent glutinous filament of which the cocoon is made, two or three leaves into an exterior envelope, which serves as a basis to spin the complete cocoon in; besides, the cocoon is suspended from a branch of the tree by a thick, strong, consolidated cord. The cocoon is of an exact oval shape, and exceedingly firm texture. The chrysalis remains dormant for about nine months, viz. from October until July, the perfect insect always emerging during the night; and does not exist more than from six to twelve days when confined.

Michael Atkinson, Esq., says, "This species cannot be domesticated. I am informed that the natives cannot even retain any of it for seed. The hill people say that they go into the jungles, and under the Byer and Asseen trees they find the excrement of the insect; on which they examine the tree, and, on discovering the small worms, they cut off branches of the tree sufficient for their purpose, with the young brood upon them; these they carry to convenient situations near their houses, and distribute the branches on the Asseen tree in proportion to the size thereof, but they put none on the Byer tree. The Parieahs, or hill people, guard the insects night and day while in the worm state, to preserve them from crows and other birds by day, and from bats by night."—Dr. Roxburgh, Trans. Linn. Soc. vii. p. 33 (1804).

According to Col. Sykes, this is the "Kolísurra silk-worm of the Deccan. It feeds indiscriminately on the Sagwan or Teak-tree

(*Tectona grandis*), the Bor (*Zizyphus jujuba*), the Asana (*Terminalia alata glabra*), and the Mulberry Tut (*Morus indica*). The cocoons are extensively used by matchlock-men, cut into thongs, as ligatures for binding the matchlock barrel to the stock : the thongs are more durable than those of leather."

From the Journal of the Agricultural and Horticultural Society of India, 1848 (vi. p. 167, *et seq.*), we extract the following notes by Messrs. B. H. Hodgson and R. W. G. Frith. According to Mr. Hodgson, "this is the *Munga* silkworm moth of the Meches, and is found wild in the Saul forest. It feeds on the Saul tree (*Shorea robusta*) ; the fibre yielded is very strong, and must surely be that known to classic commerce, and used by the Romans for the manufacture of the awnings of their immense theatres." Mr. Frith says :—

"As far as my acquaintance with this insect extends, I believe it to be found throughout the whole of this side of India ; that is to say, from the north-western range of the Himalaya direct south as far as Midnapore, and also through the north-eastern range to Assam and southwards to Chittagong. I have no doubt but that it extends further, but cannot state so from my own experience. Dr. Royle, in his volume on the productive resources of India, states that it was found by Colonel Sykes in the Bombay, and by Dr. Geddes in the Madras Presidency. I have seen it from Mussooree, and have it in my own collection from Kussowlee, Darjeeling, Assam, Cherra Poonjee, Sylhet, Chittagong, from Chota Nagpore, and from several of the districts of Bengal. In Bengal I have taken the larva at all seasons of the year, except during the cold weather, when the trees constituting its food are useless. It is most abundant, I am informed, in the Bhangulpore district, where the cocoons in their proper season are collected by cart-loads for the manufacture of the *Bhaugulpore* or *Tusseh silk*, as it is called, and now so well known. It is not on account of the great size of the larva that it is obliged to take to the under side of the twigs to enable it to traverse them in search of food (as is [above] stated by Dr. Roxburgh), for it can pass along the twigs in any position when they are strong and thick enough for its powerfully clenching feet to find sufficient to grip hold of. It is clear that when the larva approaches the ends of the thinner branches and twigs (which it frequently does, having taken it on some so slight that it has been in a perfectly pendent position), it would be impossible for it to travel with ease to itself in such a position as to keep itself *upwards* ; it therefore prefers to take the *under* side of the twig, and passes along it in a suspended position, with the aid of its powerful feet,—for it takes some little trouble to make them release their hold when once firmly fixed.

"I have known the perfect insect make its appearance out of the cocoon in the rainy season in about twenty days. A great deal depends, however, upon the temperature and the state of the atmosphere as to the number of days that are required ere the moth makes its exit from the pupa state. The food of the larva seems to be confined to the leaves of but a few trees : I found it only upon



the Bair (*Zizyphus jujuba*), both wild and cultivated kinds, and on the Badaam or country almond (*Terminalia catappa*). Mr. Hugon (see Journ. Asiat. Soc. vi. p. 32) states that it feeds, in Assam, not only on the Moonga trees, but also on the former of those mentioned above, and on the Semal (*Bombax heptaphyllum*). Dr. Helfer describes it as being taken upon and from other trees, and these are transplanted on to the Assun tree (*Terminalia alata*), but that they feed most commonly in the wild state on the Bair and Semal trees. Mr. Hodgson again has discovered that its food is the Saul tree (*Shorea robusta*), since writing which I have been informed by a friend that in the Midnapore district the larva feeds upon the Saul tree also.

“Dr. Helfer (J. A. S. Beng. vi. p. 43) states that, ‘according to Michael Atkinson of Jungypore, this species cannot be domesticated, because the moths take flight before the females are fecundated.’ Dr. Helfer’s opinion does not bear out the truth of this remark; and I agree with him, as he further states, in continuation, that, having kept them in a musquito curtain to prevent their escape, they were readily impregnated by the males, and deposited thousands of eggs. The moths no doubt, both male and female, will fly away if not confined in any manner to prevent them, particularly the males, for the sole purpose of seeking the females. I am of opinion that this silkworm might be reared and domesticated with very little care and attention. A female, for instance, produced from the cocoon, and retained captive, can, as above stated, be readily impregnated by the males, which are so eager for the intercourse, that I have at times taken as many as from ten to fifteen individuals in the course of a couple of hours, between the hours of two and four in the morning, and that for three or four times in succession, with the aid of the same decoy female. The moths, both male and female, live for about ten days, if they are not allowed to approach each other for the purpose of reproducing their species, and this without food of any kind, seeing that they are not provided by nature with a mouth.

“Mr. Hugon states that the natives consider there are two varieties of this species, the Bhugy and Jharoo. I do not think so; I believe them to be one and the same species. The larva sometimes, for instance, when feeding on the common Bair of the jungles, is of a very dark green colour, precisely that of the leaf itself, and might by some be considered as a different species, when compared with one that has fed on the Badaam (*Terminalia catappa*), which is of a much lighter and prettier green, with a degree of transparency at the same time, and a slight tinge of yellow pervading it. The fact of the perfect insect being devoid of any mouth has led me to infer that the secretion which it emits for the purpose of softening the substance of the very hard cocoon from which it has to make its escape is voided from the abdomen; and when effected, it has to *turn itself round in the cocoon* to enable it to set to work, with its two forefeet, which are provided with extremely strong and curved claws, and, thread by thread, works for itself an opening, through which,

while yet moist, its escape from the cocoon is effected, and that too before its wings have in any way enlarged by expansion to impede its exit. It is my intention to endeavour to ascertain this point beyond any doubt, if possible\*."

Mr. Hodgson, again, says:—"With regard to the distribution of the species, I apprehend that Mr. Frith is mistaken in supposing it does or can occur in climates like that of Darjeeling; for I not only never heard of the species here, but have failed in an experiment to rear it, which was carefully conducted under favourable circumstances, from cocoons got in the Saul forest, by Mechis in my service, who are habituated to rearing silkworms. Gentlemen who make collections in this quarter are apt to blend whatever they procure from the Tarai forest, and lower hills, and from the mountains above them; and I conjecture that Mr. Frith's specimens of *Antheræa paphia*, said to come from Darjeeling and Cherra Poonjee, were really obtained in the lowlands beneath those places. I notice this point because of the numerous and important mistakes relative to the geographic distribution of zoological and botanical species which have thus been propagated. For example, Mr. Ogilby was led in this manner to suppose an Otine bird (*Eupodotis bengalensis*) an inhabitant of these vast and precipitous and heavily wooded mountains, and to name the species *Hamalayensis*, though it is really as little capable of dwelling in such a habitat as is, I apprehend, the *Anth. paphia*, or, more generally, any species of silkworm whatever. Silkworms abound south and east upon or near the level of the plains, but I doubt if they pass the limits of Bengal in a north-westerly direction, even upon the plains; and, so far as I know, the Cusi river is their limit in that direction; nor do I believe they are ever found, tame or wild, at elevations materially above the plain level in Bengal or in Hindostan. In the Saul forest they may pass up towards the north-west as far as that forest extends, or to Hurdwar. But the Saul forest is hardly elevated at all above the level of the adjacent plain; and Cherra at 4000 and Darjeeling at 7000 differ *toto cælo* in characteristic productions, as in climate, from all places situated on the low open level of the Gangetic plains. The *Anth. paphia* avoids the open plain, as well as the mountainous heights;

\* Captain Thomas Hutton, in the Journal of the Agri-Horticultural Society of India for 1856, p. 166, says, "*I doubt this*, because I have fully ascertained that the species known as *Actias selene*, which is furnished on the shoulder of each wing with a hard brown spine for the purpose of dividing the threads, likewise discharges a moistening liquid; and although, as in *Saturnia*" (i. e. *Antheræa*), "it is said to have *no mouth*, yet it is nevertheless *from the mouth*, or the place where it should be, that the solvent is discharged. The mouth is an *imperfect* mouth only, and is not organized for the reception of nourishment, although sufficiently perfect, it would appear, to secrete the liquid with which the threads are moistened. When the agglutinizing matter is thus dissolved, the threads are easily separated by the wing spines, and an opening afforded for the egress of the moth. I have this season watched this process in no fewer than 200 specimens of *Actias selene*, and can answer for there being no mistake about the matter, a drop of the clear colourless liquid often remaining upon the tuft of hair or down on the forehead between the eyes, and which tuft appears to be used as a brush for the application of the solvent to the threads of the cocoon."

and, as it seems to me, is exclusively confined to primitive forests on the level, or near it, of the plains. If, therefore, the species be found wild in Bhaugulpore, Sylhet, Chittagong, or even Choto Nagpore, it is, I apprehend, confined in all those districts to the uncultivated and forest tracts at the base of their respective hill ranges. Further inquiry as to the food of the wild worm of the Saul forest confirms my prior information, that this species feeds almost, if not quite exclusively, on the leaves of *Shorea robusta*: and, as that tree extends not westerly beyond Hurdwar, the habitat of Kussowlee appears to me dubious, unless there be some mistake about the species.

"The above remarks," continues Mr. Hodgson, "may seem tiresome: but those who are aware of the stress now laid on the geographic distribution of species, and of the numerous errors of fact that have crept into the subject, as relates to this quarter, from the source above adverted to, will probably deem otherwise. My attention was drawn to the subject of the distribution of silkworms in India, with reference to the notices which the classics have left us of the ancient trade of India with the west, in the Roman times particularly."

To the above Mr. Frith replies:—"Regarding the geographical distribution of the species, I am almost at a loss how to satisfy Mr. Hodgson as to the circumstance of its being found at Darjeeling, having received it from thence myself, from a party collecting for me. Again, those from Cherra Poonjee were collected by persons on the spot who are employed by me for the sole purpose of forming entomological collections."

Again, Mr. Hodgson writes:—"The wide diffusion of silkworms throughout the continent of India in the plains seems clear, and is a very interesting circumstance with reference to what we find in the classics about the trade of India with Europe in the latter days of Rome and thereafter. Mr. Taylor (Journal Asiatic Society of Bengal) supposed that the chief 'things in commerce' in those days were products of Assam only. But I had long before traced most of them as indigenous products of all India extra Gangem, from Suddiah to Hurdwar, leaving silk only as an apparent exception. It need be no longer; fine wild worms of various kinds being, it now appears, found north-west all the way to the *débouche* of the Ganges into the plains. So far, then, I agree with Mr. Frith. But I confess myself still quite a sceptic as to the alleged fact of the silkworms tenanting these mountains at elevations like that of Darjeeling."

In answer to the above remarks by Messrs. Hodgson and Frith, we quote the following by Captain Thomas Hutton:—

"The Tusseh Moth (*Saturnia paphia*), which Mr. Frith says he has procured from Mussooree and Kussowlee,—a statement doubted by Mr. Hodgson, who confines the insect to the plains and base of the hills, pointing out that collectors are in the habit of jumbling species from various localities into the same box, and calling them a collection of Himalayan species—

"Mr. Frith afterwards appeals to my letter to Mr. Westwood as

showing, as he imagines, from the mention of *Sat. paphia*, that I had procured it at Mussooree. This is rather a bold jump to a conclusion!

"In reply to this part of the discussion, I incline to the side of Mr. Hodgson, whose remarks regarding the mode adopted by collectors of specimens in general, no matter whether birds or insects, are most correct. The practice here at Mussooree is this:—a person wishing to make a collection either takes a native collector into service, or purchases the specimens singly from independent collectors who hawk about insects for sale. These native gentry, whether hired or otherwise, not being over-fond of hard work, invariably *go down from Mussooree into the Doon at the foot of the mountains*, and having there filled their boxes, return to the hills to sell them.

"The collector, in most cases disdaining to know the difference between a moth and a butterfly, stows them all away into his boxes. These collections are then sent off, or carried off, as illustrative of the entomology of Mussooree and Landour, to which the collection bears about as close an affinity as the fauna of Southern India does to that of the Northern Provinces,—species common to both being intermingled with others that exclusively belong to the one locality or the other. Thus the greater portion of species in these collections is exclusively lowland.

"Now among the lowlanders I am inclined to include the Tusseh Moth! I have collected at Simla and its neighbourhood, as well as at Mussooree; but during my long residence at the latter station, I have only once in fifteen years seen the Tusseh Moth; and that one specimen was a female captured *in the Dehra Doon near Hurdwar*; besides that, I am not altogether certain that the species is identical with the true Bengal Tusseh. In fact I doubt the occurrence of that species in the hills, whether at Mussooree or at Kussoowlee.

"Thus far the statements of Mr. Hodgson are, I think, correct; but when he proceeds to assert that the Saul tree (*Shorea robusta*) does not extend westward of Hurdwar, he falls into an error that any traveller may correct, since there are splendid forests of Saul throughout the Dehra Doon, and even away as far west as the Jumna, if not farther.

"The Tusseh Moths to which I alluded in my letter to Mr. Westwood were all sent to me in cocoon from Bhagulpore by the late Capt. Don. We have here at Mussooree, and also at Simla, a species of *Saturnia* [*Antheræa*] feeding on the common Hill Oak (*Quercus incana*), and bearing a resemblance to the Tusseh Moth, though much smaller, and quite distinct: can this be Mr. Frith's Kussoowlee species?

"Mr. Frith mentions having 'inspected a very fine collection made by a gentleman at Mussooree, in which are no less than eleven species of true *Bombycidae*, viz. nine of the genus *Saturnia*, one of *Actias*, and one of *Saturnia* [*Antheræa*] *mylitta*, or the true Tusseh Moth.' Now if this collection belonged to a son of the late Col. Buckley\*, I can easily clear up the mystery of the Tusseh Moth coming from

\* This collection was presented to the East India Company's Museum in 1849.



Mussooree, since it was *one of my Bhagulpore specimens* given in exchange for something else : and I may as well point out that the collection to which I allude contained species from various parts of India, I myself having contributed insects from Mirzapore, Nee-much, and even from Afghanistan in exchanges, while there were also a few from China ! Besides which, Mr. Buckley's object being to make a collection without noting or caring for locality, the greater number of his specimens came, as usual, from the Dehra Doon. This (if I am right in my conjecture about the collection alluded to by Mr. Frith) may serve to show with what degree of suspicion any collection, *not made by a naturalist*, should be regarded by scientific men both at home and abroad, since, by taking it for granted that the collection contained only the species proper to the locality in which it is stated to have been made, the closet naturalist may be led to form the most erroneous conclusion in regard to the distribution of species. Nor is this remark to be confined to insects only, since it will equally apply to ornithological collections ; so that any modern Adam who may undertake to form a system, founded rather *upon the length and breadth of an animal's tail* than upon the habits and manners of the species in their native haunts, and who thunders forth his dogmas from his artificial paradise of musty skins, may, and doubtless often has, put forth a host of errors for the acceptance of other *naturals* as little conversant with living species as himself !

"My own limited experience, therefore, leads me to coincide in opinion with Mr. Hodgson, and I accordingly reject the Tusseh Moth from the catalogue of Mussooree and mountain species, not even granting it a place at Kussowlee.

"Of true mountaineers, we have, as far as my knowledge extends, three species of *Saturniæ* ; two others are found only in the depths of the warmest valleys, such as *S. atlas?* and *S. katinka* (Westw.) ; the former occurring likewise in the Doon along with the Tusseh Moth ; thus making in all six species of *Saturniæ*."

In a foot-note Capt. Hutton further remarks :—"In my enumeration of the species found here, I omitted one large *Saturnia*, which I once found upon a quince tree in the Botanical Garden ; the larva when first seen appeared to be a white cocoon on the back of a leaf, but a closer view showed me the caterpillar densely covered with long white hairs. I never procured a second specimen.

"To these we may add one species of *Actias*, which is, I believe, confined to the hills from 5000 feet upwards to 7000 feet, and perhaps higher ; it occurs likewise apparently in Sylhet, as Major Jenkins long ago kindly sent me a drawing of what I take to be this species. And lastly we have one species of true *Bombyx* (*B. hut-toni*, Westw.), which occurs abundantly on the wild mulberry from the Doon upwards to at least 7000 feet ; thus showing a list of known silk-spinners to the number of nine, viz. seven *Saturnia*, one *Actias*, and one *Bombyx* : more there may doubtless be, although as yet unknown to me, but I strongly suspect that some of those mentioned by Mr. Frith as coming from Mussooree and Kussowlee were in reality natives of other localities.

"Mr. Hodgson likewise notices the occurrence of what he and Mr. Frith pronounce to be the Arrindy Moth (*S. cynthia*) ; and I have it also from the Mussooree, where the caterpillar feeds on the shrub Mussooree (*Coriaria nipaensis*), and from which this station derives its name. Dr. Roxburgh's figure of the caterpillar of *S. cynthia* is, however, so thoroughly unlike those occurring here, that, notwithstanding the identity (if I may so speak) of the imago, I am unwilling to pronounce decisively as to the species until I have compared our larvæ with those of undoubted *S. cynthia* from Bengal. Ours occurs from the foot of the hills up to 6000 feet of elevation."

Lady Isabella Rose Gilbert figures the transformations of *Anth. paphia*, and in her MS. Notes says :—"Tusseh Moths are hatched twice in the year, in May and August : the larvæ go into the chrysalis state in September, remaining so till the May following ; whilst those that enter the chrysalis state in July come out in three weeks. Many of the females lay eggs in eight or ten hours after quitting the chrysalis ; others again do not till the following night, or longer. In ten days the young larvæ make their appearance, and feed on the Assun tree and the Sâl sakooa (*Shorea robusta*). In about three weeks from the time of their exclusion from the egg, they attain their full size, and in eight or ten days more prepare for their transformation into the chrysalis. The caterpillar commences its operations by drawing a few leaves slightly together, as if to screen it from observation. It then spins a strong cord, composed of many threads, altogether about the thickness of a crow-quill, at the end of which it weaves the cocoon. The cocoon is so transparent for the first six and thirty hours, that the larva may be distinctly perceived at work in the interior ; after that time the cocoon gradually acquires consistence by the continued industry of the caterpillar, and becomes quite opaque from the addition of a glutinous liquid with which it moistens the whole. When that dries, the cocoon appears as if covered with white powder, and in the course of a couple of days becomes perfectly hard.

"The moth generally deposits its eggs within a few yards of the cocoon ; these the villagers collect and keep in their houses till the young caterpillars come forth, when they are placed on the Assun trees in the jungles, the proprietors remaining to protect them from the birds, and to bring home the cocoons when perfect. The people who rear these silkworms are of the Sontal and Bhoree castes, and practise many superstitious ceremonies while tending them in the jungles."

## 2. *ANTHERÆA PERNYI* (Guérin).

*Saturnia pernyi*, Guérin-Ménéville, Revue et Mag. de Zool. (1855) p. 297. pl. 6. f. 1.

*Antheræa mylitta*, var., Walker, List Lep. Het. Brit. Mus. pt. vi. p. 1378.

*Hab.* China (Guérin). In British Museum Collection.

M. Guérin-Ménéville observes that *A. pernyi* may be distinguished from *A. paphia* by the form and texture of its cocoon. In his figures

the male of *A. pernyi* differs from the same sex of *A. mylitta* by its less falcate fore-wings, and by the exterior band, which is different in colour, more straight; and in the hind-wings is contiguous to the ocellus. It is well figured in the above work.

3. *ANTHERÆA FRITHI*, Moore. (Annulosa, Pl. LXV. fig. 1.)

*Antheræa Frithi*, Moore, Catal. Lep. Mus. Ind. House, ii. p. 396 (1858).

Male. Yellowish-ferruginous, the disc suffused with patches of darker ferruginous; the exterior margin and about the base greyish-ferruginous. Fore-wing with the costal band grey; the submarginal dark line evenly undulated, and parallel with it and before the ocellus are two deeply undulated lines, the inner spaces between which are suffused with yellow; a large prominent apical patch and space within the cell yellow. Hind-wing with the submarginal line deeply undulated, with two parallel deeply undulated inner lines, the spaces between which are suffused with yellow, the inner line extending round the ocellus and joining the sub-basal line. Ocelli small, similar to those in *Anth. paphia*. Antennæ yellowish. Frontal band grey. Body yellowish-ferruginous.

Expanse of wings  $5\frac{1}{8}$  inches.

*Hab.* Neighbourhood of Darjeeling. In Museum, India House, London.

4. *ANTHERÆA ROYLII*, Moore. (Annulosa, Pl. LXIV. fig. 1.)

*Antheræa Roylii*, Moore, Catal. Lep. Mus. Ind. House, ii. p. 397 (1858).

Dull greenish-buff colour. Male.—Fore-wing with the costal band brownish-grey; the subbasal lines and the oblique submarginal line indistinct, greyish. Hind-wing with the submarginal line indistinct. Ocellus of both fore- and hind-wings ill-defined, greenish-buff colour within, but with the inner half suffused with vinaceous; vitreous spot minute, the narrow outer ring black on its exterior half and red on the inner half, with an inner yellow line on the former, and a white line on the latter. Female with the wings somewhat brighter coloured exteriorly; the submarginal line of both wings more distinct; ocelli more distinct. Frontal band brownish-grey. Antennæ brownish. Body buff-colour.

Expanse of wings of male  $5\frac{3}{4}$ , female  $6\frac{1}{2}$  inches.

*Hab.* Neighbourhood of Darjeeling. In Museum, India House, London.

5. *ANTHERÆA JANA* (Cramer).

*Phalæna-attacus jana*, Cramer, Pap. Exot. iv. p. 220. pl. 396. f. A (1782).

*Bombyx jana*, Olivier, Enc. Méth. Ins. v. p. 28.

*Antheræa jana*, Hübner, Verz. bek. Schmett. p. 152; Walker, List Lep. Het. Brit. Mus. pt. 5. p. 1250.

*Hab.* Java (Cramer).

*Remark.*—As yet we have no example of this species in England, but its distinguishing character is its small size; the ocelli being nearly opaque; and the hind-wing has, besides the usual submarginal line, two additional undulated wider lines proceeding from the abdominal margin, the first extending round the ocellus, and the other only to the ocellus.

Expanse of wings  $4\frac{2}{3}$  inches.

6. *ANTHERÆA PERROTTETI*, Guérin.

*Bombyx perrottetii*, Guérin-Méneville, Mag. de Zool. 1843, pl. 123.

*Antheræa perrottetii*, Walker, List Lep. Het. Brit. Mus. pt. 6. p. 1379.

*Hab.* Pondicherry (Guérin). *Non vidi.*

Deep yellow; base of costal margin of fore-wing grey, with indistinct darker submarginal line; ocelli small, round, red, the exterior ring black, the inner whitish, with a small medial yellow spot; thorax in front grey; abdomen deep yellow.

7. *ANTHERÆA SIMLA* (Westwood).

*Saturnia simla*, Westwood, Cabinet Orient. Ent. p. 41. pl. 20. f. 1 (1847).

*Antheræa simla*, Walker, List Lep. Het. B.M. pt. 5. p. 1249; Moore, Catal. Lep. Mus. Ind. House, ii. p. 399.

*Hab.* Simla (*Capt. Boys*); neighbourhood of Darjeeling. In Museum, India House, London, and British Museum.

“Fore-wings very pale fulvous-brown, thickly irrorated with red scales; the costa and an oblique fascia, before the middle of the wings, very much attenuated posteriorly, of a pale pinkish white; the basal portion of the wing reddish, terminated by a dark pink line; the pale fascia is succeeded by a very oblique streak of reddish-brown, which rests on the *anterior edge* of the ocellus, which is rather small and of a dusky colour, with a slender curved white line on its inner side; the succeeding space is thickly irrorated with red-brown scales, followed by two rather indistinct slender and much waved strigæ, which terminate at the apex of the wing in a white angulated mark and a small black patch; the outer margin of the wing is widely ashy-fulvous, followed by a narrow ashy-coloured edging; the hind-wings have the greater portion of a pink colour, traversed basally by a dark pink fascia, which is recurved towards the inner margin; the middle of the wing is occupied by a large black ocellus bearing a dull yellow circle with a slender white curved line, and a dark pink one at its base; between the ocellus and the exterior margin of the wing are two waved red-brown lines, beyond which the colour is of a fulvous red, with a dull pale greyish-buff edging.”

Expanse of wings nearly 6 inches.

8. *ANTHERÆA HELFERI*, Moore. (*Annulosa*, Pl. LXIV. fig. 2.)

*Antheræa helferi*, Moore, Catal. Lep. Mus. Ind. House, ii. p. 397 (1858).

No. 400.—PROCEEDINGS OF THE ZOOLOGICAL SOCIETY.



Male. — Yellowish-ferruginous, with a vinaceous tinge basally. Fore-wing with the grey costal band ; three dark ferruginous pink-margined lines : the first sub-basal, transverse, and curved : the second within and near the base of the cell, oblique : the third above and joining the ocellus ; the ocellus without a vitreous spot, which is replaced by a short yellow-margined line ; a double submarginal indistinct undulated line, its apical end with a blackish spot ; an indistinct suffused inner line close to the ocellus ; and a dark marginal line of undulated streaks. Hind-wing with a dark marginal lunulated line ; two darker submarginal deeply undulated lines, the inner line extending round the ocellus to the sub-basal line ; the ocellus with the black outer line terminating at its upper end in an oval spot, without a central vitreous spot, which is replaced by a narrow yellow line. Antennæ brown ; frontal band grey ; body yellowish-ferruginous.

Expanse of wings 6 inches.

*Hab.* Neighbourhood of Darjeeling. In Museum, India House, London.

*Remark.* — Somewhat allied to *A. simla* ; but may be distinguished from that species by its more falcated fore-wings, and by the absence of the obliquely transverse dark band, which ascends from the middle of the posterior margin, touching the ocellus on its inner side, and extends to the costa before the apex. The ocelli are also different, those in *A. helferi* being of a pale colour within, while those in *A. simla* are quite black, and on the hind-wing are much larger.

#### 9. *ANTHERÆA ASSAMA* (Helfer).

*Saturnia assamensis*, Helfer, Journ. As. Soc. Beng. vi. p. 43 (1837).

*Saturnia assama*, Westwood, Cabinet Orient. Ent. p. 41. pl. 20. f. 2.

*Antheræa assama*, Walker, List Lep. Het. Brit. Mus. pt. 5. p. 1249 ; Moore, Catal. Lep. Ind. House, ii. p. 398.

*Mooga* or *Moonga* of the Assamese, Hugon, J. A. S. Beng. vi. pp. 26–32 ; Helfer.

*Moonga*, Royle, Report of Paris Exhib. pt. 3. p. 216.

*Hab.* Assam, Silhet, Ceylon. In British Museum Collection.

The larva and cocoon of the Moonga are figured by Mr. Hugon in the Journal of the Asiatic Society above referred to, and he states that “although the Mooga Moth can be reared in houses, it is fed and thrives best in the open air and on the trees. The trees which afford it food are known in Assam by the following names, viz. 1. Addakoory ; 2. Champa (*Michelia*, sp. ?) ; 3. Soom ; 4. Kon-too-loa ; 5. Digluttee (*Tetranthera diglottica*, Hamilt.) ; 6. Pattee Shoonda (*Laurus obtusifolia*, Roxb.) ; 7. Sonhalloo (*Tetranthera macrophylla*, Roxb.). There are generally five broods of Moonga worms in the year.”

#### 10. *ANTHERÆA LARISSA* (Westwood).

*Saturnia larissa*, Westwood, Cabinet Orient. Ent. p. 49. pl. 24. f. 1 (1847).

*Antheræa larissa*, Walker, List Lep. Het. B.M. pt. 5. p. 1250 ; Moore, Catal. Lep. Mus. Ind. House, ii. p. 398.

*Hab.* Java (*Dr. Horsfield*). In Museum, India House, London, and M. Dalen, Rotterdam.

*Remark.*—This beautiful species may be at once distinguished from all the preceding by the ocellus of the fore-wing, which has the exterior black line dentated towards the costa. It is also more falcated in the male. The figure referred to above is a good representation of the male.

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Another species of *Antheræa* inhabits Mantchouria, as appears from the following :—

“It has long been known that in the land of the Mantchour Tartars, in a climate at least as rigorous as our own (*i. e.* England), a kind of silk is obtained, of which very large quantities go into consumption among the Chinese. This species is announced by M. Guérin-Méneville as having lately been reared in France.

“Some years since Mr. Rutherford Alcock, Her Majesty’s Consul at Shanghae, sent home samples of this material, both manufactured and unmanufactured, along with live chrysalids (cocoons) ; but the latter perished on the voyage, and the samples were accidentally misplaced and lost in the Great Exhibition of 1851. The silk was strong, with little lustre, and resembled some strong thin yellow woollen linen. It now appears that the French have been more successful, some males having already been hatched. Of the other cocoons sent to Italy and Algiers, no account is given.

“According to Guérin-Méneville, this Silkworm forms a new species of *Saturnia*, and is nearly related to the *S. mylitta*, which produces the Tusseh silk of India. But the peculiarities observable in the form, texture, and mode of attachment of the cocoons forbid the Mantchour Moth being regarded as merely a northern local form of the Tusseh Silkworm. It is also one of the same group as the Moonga Silkworm of Assam (*Sat. assamensis*, Helfer).

“Two circumstances give peculiar interest to the introduction of this useful insect ; namely the coldness of the country it naturally inhabits, and its feeding upon a species of oak, not on a mulberry. The country called Mantchouria is described as mountainous, very cold in winter, and producing *furs* among other articles of trade. Oaks, pines, willows, birches, maples, and wild roses, said to constitute the main feature of its woods, are all indications of a northern climate. The oak on which this silkworm feeds is not clearly described. According to M. Isidore St.-Hilaire, two sorts have been raised in France from the acorns received with the cocoons, one resembling the *Quercus castaneæfolia*, which is well known to be a native of Northern China, and one of a species apparently undescribed. But it is by no means improbable that the common oaks of this country would be taken to by the silkworms in question ; and if so, the sole obstacle to the introduction of silk-growing among our rural population would be removed.

"It is right to add, upon the authority of Mons. St.-Hilaire, that the interesting acquisition is mainly owing to the assistance given by Mons. Verrolles, Bishop of Colomby, and Vicar-Apostolic in Mantchouria, to M. de Montigny, the French Consul at Shanghae." (From Journ. Agri.-Hort. Soc. India, 1856, ix. p. 63, and extracted from 'Gardener's Chronicle,' 30th June, 1855.)

### Genus LOEPA, Moore.

*Antheræa* (Groups II. and III., pt.), Walker, List Lep. Het. B.M. pt. 5. p. 1250.

*Loepa*, Moore, Catal. Lep. Mus. Ind. House, ii. p. 399 (1858).

Antennæ bipectinated. Palpi very short. Proboscis obsolete. Abdomen not very stout. Wings moderately long and broad, each with an ocellus, whose disc is thinly clothed with hairs; fore-wing convex towards the tip, which, in the male, is somewhat falcated; hind-wing with the angles rounded.

#### 1. LOEPA KATINKA (Westwood).

*Saturnia katinka*, Westwood, Cabinet Orient. Ent. p. 25. pl. 12. f. 2 (1847).

*Antheræa katinka*, Walker, List Lep. Het. B.M. pt. 5. p. 1251.

*Loepa katinka*, Moore, Catal. Lep. Mus. Ind. House, ii. p. 399.

*Hab.* Assam; Silhet; Java.

Yellow; costa of fore-wings grey. Each wing with a fulvous-brown ocellus, the middle of which is purplish, and has a curved white streak which is bordered by a slender black line; across the middle of the wing is an indistinct, wavy and bidentated line, beyond which is a double blackish wavy line terminating near the apex in a black demi-oval spot, followed by a fulvous apical patch containing two white lunules; near the exterior margin of the wings is a submarginal row of slender white lunules, and near the base of each wing is a slender rosy zigzag streak.

Expanse  $2\frac{3}{4}$  to  $3\frac{3}{4}$  inches.

The larva and cocoon of *Loepa katinka* are figured in Catal. Lep. Mus. India House, vol. ii., plate 20. fig. 1, copied from the original drawing made by Dr. Horsfield in Java, where the larva "feeds on the Galing (*Cissus*, sp. —) and the Girang (*Leea*, sp. —). Abundant during December, January and February."

#### 2. LOEPA THIBETA (Westwood).

*Saturnia thibeta*, Westwood, P. Z. S. (1853) p. 166; Ann. Nat. Hist. 2nd ser. xv. p. 302 (1855).

*Antheræa thibeta*, Walker, List Lep. Het. Brit. Mus. pt. 5. p. 1250.

Fore-wings yellow, much varied with grey scales, especially at the base and beyond the middle; near the base is a transverse oblique slender red striga. In the middle of all the wings is a moderate-sized oval ocellus, with a black central dot, marked on its inner edge

with a curved white line, the outer part being liver-coloured, edged with a black ring. Outside the ocellus the wings bear a darker fulvous, ill-defined, very oblique fascia, followed by two slender very strongly undulating dark lines; the undulations being much stronger towards the tip of the wing, where the outer one is connected with a white curved line, like a U, which ends on the costa in an oval black patch, and is bounded on its outside by a slender rich red-brown line; parallel and near the apical margin is an interrupted slender black striga, followed by a row of submarginal oblong fulvous spots. The ocellus of the hind-wing is preceded by a curved dark brown line, and is followed by three slender very much undulated lines, the two next the ocellus being chestnut and the outer one black; beyond the last is a broad greyish fascia, edged outwardly with a slender interrupted black line, followed by a row of oblong sublunulated fulvous spots. Antennæ, body, and legs fulvous-yellow; front of thorax with a grey band.

*Hab.* Thibet (*Westwood*).

#### Genus ACTIAS, Leach.

*Actias*, Leach, Zool. Misc. ii. p. 25 (1815); Macleay.

*Tropæa*, Hübner, Verz. bek. Schmett. p. 152 (1816).

*Plectropterion*, Hutton, Trans. Ent. Soc. Lond. v. p. 45 (1847).

*Phalæna-attacus*, pt., Linnæus.

#### 1, ACTIAS SELENE (Macleay).

*Actias selene*, Macleay, Leach's Zool. Misc. ii. p. 26. pl. 70 (1815); Hutton, P. Z. S. Lond. (1856) p. 5; Moore, Catal. Lep. Mus. Ind. House, ii. p. 400.

*Tropæa selene*, Hübner, Verz. bek. Schmett. p. 158; Walker, List Lep. Het. B.M. pt. 6. p. 1262.

*Plectropterion selene*, Hutton, Trans. Ent. Soc. Lond. v. p. 85.

*Plectropterion dianæ*, Hutton, Trans. Ent. Soc. Lond. v. p. 45 (1847); Ann. Nat. Hist. xvii. p. 60.

*Phalæna attacus luna*, Cramer, Pap. Exot. i. pl. 31. f. A, B (nec Drury).

*Hab.* N. India; Darjeeling; Masuri.

The larva of this curious species is figured by Capt. Hutton in the 'Transactions of the Entomological Society of London,' vol. v. pl. 5. He remarks, "A specimen of this splendid Moth was brought to me on the 13th April 1842, by a boy who had captured it in a deep and warmly sheltered glen at Mussooree. The specimen was a female, and was found clinging to the branches of a tree, or rather shrub, very similar to the Tartarian honeysuckle; it was accompanied by a male (*in coitu*), which effected its escape. As the specimen was much injured by her rough captor, I suffered her to live and deposit her eggs, which she did on the evening of the same day, to the number of thirty-two, each being of the size of a large mustard seed, and of a mottled brownish colour. During the whole of the succeeding day she remained perfectly stationary, but in the



evening deposited 84 eggs ; and on the following evenings she again deposited as follows :—On the 15th, 38 eggs ; on the 16th, 21 ; on the 17th, 16 ; on the 18th, 21 ; on the 19th, 14 ; on the 20th, 14 ; and on the 21st, 7 ; amounting in all to 246 eggs, and she then died.

“On the 28th April I received a male and female from the same place ; and in the evening the female deposited 89 eggs, and continued each night to increase the number until she had deposited 300 eggs, when she died.

“On the 30th April, or eighteen days from the time of deposition, the first batch of eggs began to hatch ; the newly born larva is about 3 lines in length, hairy, and of a pale rufous-red, with a single black band across the middle of the body, and a small black transverse mark on the anterior segment ; along the back are two rows of small tubercles, and another along each side, from each of which spring a few short hairs, the base of which forms a small black dot ; there is also an anal tubercle, larger than the others, and placed between the two last tubercles of the dorsal rows ; the head is black. I was now exceedingly puzzled to find out the proper food, and, having unsuccessfully tried several kinds, at last gave them the leaves of our common hill oak (an *Ilex*), of which they ate sparingly and without appetite. This was evidently not the proper food ; and although they continued to eat it they did not thrive, but died in such numbers, that I had at last only five larvæ left out of 546, and even these I was in daily expectation of losing ; when, by a lucky chance, on the 30th of June, I discovered a single larva in the forest feeding on a tree known to the natives as the ‘*Munsooree*’ (*Coriaria nipalensis*). Branches of this tree were now substituted for the oak, and from thenceforward the larvæ ate greedily and increased rapidly in size. The *first* moult commenced when six days old, and this occupied three days, so that at the end of nine days the larva appeared in its *second* stage. The black transverse band upon the body had disappeared, but the head still remained of that colour, and the rest of the body was hairy and rufous ; the tubercles being black on the summit and more prominent ; pro-legs brown.

“The period between each change was about ten days in some specimens, but varied in others between that and shorter periods.

“In the *third* stage the caterpillar appeared of a bright rufous colour, the black dots or tubercles being larger and more prominent, but there were no black bands. In the *fourth* stage the change was still more remarkable, for the caterpillar now appeared of a beautiful apple-green, each tubercle headed with bright orange, except the *four* which spring from the second and third segments, which are ringed with black, and crowned with pale yellow ; and the *anal* and *two posterior* tubercles, which are green throughout. From each tubercle springs a small tuft of hair, the centre of each being longer than the others ; the head and prolegs brown ; along each side is a line which is red above and yellow below, and the spiracles are red ; there is a line of very small yellow dots along each side, between the rows of tubercles. In the *fifth* stage the colours are the same, as

they are also in the *sixth* and *seventh* stages ; but the caterpillar increases rapidly in size, and is most beautiful and delicate in appearance, with a semi-transparency of hue, which makes it look something like wax-work.

"One of these commenced spinning its cocoon on the 17th July, being then about forty-six or forty-seven days old, and the remainder after the interval of a day or two. The cocoon is formed of coarse brown silken threads, closely interwoven, and of an ovate form ; it is inclosed among the leaves of the tree, which are in fact glued closely round it. It is hard, and not furnished interiorly with a soft silken bed, the chrysalis lying within a hard and hollow chamber. The chrysalis remained thus until the 14th August, when the one which had turned on the 17th July produced a perfect female, after a period of twenty-nine days. Another, which had turned on the 19th July, came forth a male on the 16th August, showing the time to be pretty uniform. A large caterpillar, however, which I found in the forest on the 16th July, turned to a chrysalis on the 24th of that month ; but, instead of coming forth in the autumn, it remained in the chrysalis state throughout the winter, as did some others, coming out in the following summer, namely on the 11th, 14th, and 18th of June.

"The caterpillar feeds upon several trees common on these hills. The most common food appears to be the Munsooree, a shrub which is so common, as to have given rise, I believe, to the name of this settlement, viz. 'Munsoory,' or more commonly among Europeans 'Mussooree' (*Coriaria nipalensis*)."

"I have again reared specimens of *A. selene*, and observed attentively the method by which it *cuts* its way through the cocoon, by means of the instrument which I have named 'the wing spur' or 'spine.' Before proceeding to separate the threads of the cocoon by means of the wing spines, I have ascertained that the Moth ejects from *the mouth* a few drops of a clear colourless fluid, with which the gum is dissolved ; and it appears to use the tuft of down on the front, between the eyes, as a brush for the application of the solvent." —P. Z. S. 1856, p. 5.

Capt. Hutton further remarks (Journal of the Agri-Horticultural Society of India, ix. p. 167-9 (1856), "I have this season (1855) watched the process of the escape of this Moth from the cocoon in no fewer than 200 specimens, and can answer for there being no mistake in the matter, a drop of the clear colourless liquid often remaining upon the tuft of hair or down on the forehead between the eyes, and which tuft appears to be used as a brush for the application of the solvent to the threads of the cocoon.

"I have this year (1855) reared a number of the caterpillars of *A. selene* for the purpose of ascertaining the value of the silk, but am sorry to say have failed in my attempts to unwind the silk from the cocoons. With some difficulty I managed to procure a supply of eggs from the moths, which came forth in October, and had intended sending them to Europe, when to my regret and surprise they began to hatch on the 4th of November, and are still coming forth

daily (10th). They are at present thriving on the shrub, *Coriaria nipalensis*, growing in the open air; but whether they will be able to spin up again before the frosts set in remains yet to be seen. These caterpillars feed naturally on *Coriaria nipalensis*, *Andromeda ovalifolia*, the walnut, and I think also upon *Carpinus bimana*. The first-named shrub would probably grow well and rapidly in some parts of Europe, and so furnish nourishment both for the larvæ of *Act. selene*, if found worth introducing, and also of *S. cynthia*, which seems to be acclimated in Italy.

"This species, I believe, is confined to the hills from 5000 feet upwards to 7000 feet, and perhaps higher; it occurs also in Silhet, as Major Jenkins kindly sent me a drawing of what I take to be this species."

The transformations of *Act. selene* were also observed by Lady Isabella Rose Gilbert, and are figured among her Ladyship's original drawings, from which those given in the Catal. Lep. Mus. India House (vol. ii. pl. 19.) were copied.

## 2. ACTIAS MÆNAS, Doubleday.

*Actias mænas*, Doubleday, Ann. Nat. Hist. 1847, p. 95; Westwood, Cabinet Orient. Ent. p. 45. pl. 22.

*Tropæa mænas*, Walker, List Lep. Het. Brit. Mus. pt. 6. p. 1263. *Hab.* Silhet. In British Museum Collection.

This species differs from *A. selene* in the following characters:—"The wings are yellow; the thorax is wholly purplish in front; the wings are red along the exterior margin, and have no exterior band; the fore-wings have a band between the base and the ocellus, the ocellus being large and sickle-shaped, and very different from that of *A. selene*; and the hind-wings have longer tails."

## 3. ACTIAS SINENSIS, Walker.

*Tropæa sinensis*, Walker, List Lep. Het. Brit. Mus. pt. 6. p. 1264 (1855).

*Hab.* North China. In British Museum Collection.

"Male.—Yellow. Wings with a slender, deeply undulating, tawny middle band; ocellus rose-coloured in the centre, luteous in front, with a brown border, which is much darker and broader in front than elsewhere. Fore-wings rose-coloured along the costa. Hind-wings ferruginous along the exterior border and across the tails, which are much shorter than the breadth of the wings. Thorax rose-colour in front. Expanse about 4 inches."

## Genus SATURNIA, Schrank.

*Saturnia*, Schrank, Faun. Boica, ii. pt. 11. f. 149 (1802).

*Pavonia*, Hübner, Verz. bek. Schmett. p. 157 (1816).

*Phalæna-attacus*, pt., Linnæus.

Types *Saturnia pyri*, *S. spini*, and *S. carpini* of Europe.

## 1. SATURNIA PYRETORUM, Boisduval.

*Saturnia pyretorum*, Boisduval, Westwood, Cabinet Orient. Ent. p. 49. pl. 24. f. 2 (1847); Walker, List Lep. Het. B.M. pt. 5. p. 1273; Moore, Catal. Lep. Mus. Ind. House, ii. p. 404.

*Hab.* China. In Collection, India House; British Museum.

Milky-white; costal and frontal band white, each wing with a moderate-sized oval black ocellus, having a slender fulvous line surmounted by pale blue lunule, and with a curved vitreous central streak; beyond the middle of the wings are two strongly dentated slender dark lines, resting on a broad brownish submarginal band; a brown band also on the exterior margin, base of fore-wings, and a sub-basal band on both fore- and hind-wings, dark brown. Head, hind part of thorax, and large anal tuft dark brown.

Expanse 3 to 3 $\frac{3}{4}$  inches.

## 2. SATURNIA GROTEI, Moore. (Annulosa, Pl. LXV. fig. 2.)

*Saturnia grotei*, Moore, Catal. Lep. Mus. Ind. House, ii. p. 404.

Fore-wing pale buff-colour, brownish along the costa and about the apex, and thickly irrorated with black and brown scales to beyond the middle; a large black-margined, maroon-coloured ocellus, containing a narrow transverse white lunule; a submarginal black band, bounded inwardly with a double zigzag pale margined black line, which extends to near the apex, where the space contains a maroon-coloured patch and a black spot, both of which are irrorated with white scales; exterior margin dull buff, with a row of narrow oval maroon-brown spots. Hind-wing brownish at the base and along the abdominal margin; the disc pink, containing a similar, but smaller ocellus, as the fore-wing; a submarginal black band, bounded inwardly by two undulated black lines, the inner line extending round the ocellus; exterior margin dull buff, with a row of narrow oval maroon-brown spots. Thorax crossed by a pale buff line.

Expanse nearly 3 inches.

*Hab.* Darjeeling. In Museum, India House, London.

## Genus ATTACUS, Linnæus.

*Phalæna-attacus*, Linnæus, S. N. i. pt. 2. p. 808 (1767).

*Attacus*, Hübner, Verz. bek. Schmett. p. 155 (1816).

*Hyalophora*, pt., Duncan, Nat. Libr. vii.

## 1. ATTACUS ATLAS (Linnæus).

*Phalæna-attacus atlas*, Linnæus, S. N. i. pt. 2. p. 808 (1767); Mus. Lud. Ulr. p. 366; Cramer, Pap. Exot. iv. pp. 180, 183, pl. 381. f. C, pl. 382. f. A.

*Bombyx atlas*, Fabricius, Syst. Ent. p. 566; Spec. Ins. ii. p. 167; Mant. Ins. ii. p. 108; Ent. Syst. iii. 1. p. 407; Olivier, Enc. Méth. Ins. v. p. 24, pl. 69. f. 1.

*Attacus atlas*, Hübner, Verz. bek. Schmett. p. 156; Walker, List



Lep. Het. B.M. pt. 5. p. 1218; Moore, Catal. Lep. Mus. Ind. House, ii. p. 405.

Var. *Phalæna-attacus atlas*, Cramer, Pap. Exot. i. p. 13. pl. 9. f. A.

Var. *Saturnia silhetica*, Helfer, Journ. Asiat. Soc. Beng. vi. p. 41 (1837).

*Hab.* China; N. & S. India; Ceylon; Burmah; Java.

The larva and cocoon of this (the largest of all known Lepidopterous insects) are figured on plate 20. of vol. ii. of the Catal. of Lep. Mus. India House, from the collection made by Dr. Horsfield in Java. "The larva feeds on the Molokka (*Phyllanthus emblica*), Kupu-gaja, &c., where it was abundant during December and January."

From the MS. Notes made by Lady Isabella Rose Gilbert in 1825, we extract the following:—"A specimen (female) of this magnificent moth was brought to me on the 4th September. On the following morning she laid several pink-and-white eggs. On the 15th the young caterpillars were hatched. Being uncertain what plant they fed on, I placed them upon slips of different trees, viz. apple, peach, plum, &c. The young caterpillars were black, with numerous white spines; as they grew larger and changed their skins, the spines became covered with a kind of white powder, giving them a very delicate appearance, added to which the ground colour of the body, since the first few days after they were hatched, had become a light green. They always ate their skins after casting them. Those on the apple tree grew to an enormous size, and on the 12th October one of them began to prepare for its transformation, by bending back a large leaf and enclosing itself in a web, which it completed on the 13th. On the 22nd June following the moth came out."

It is said that the Chinese Tusseh silk is obtained from the cocoon of this species.

## 2. *ATTACUS EDWARDSI*, White.

*Attacus edwardsii*, White, P.Z.S. (1859) p. 115. pl. 57; Moore, Catal. Lep. Mus. Ind. House, ii. p. 406.

*Hab.* Darjeeling. In Collection British Museum and India House.

This species is distinguished from *Attacus atlas* "by its intensely dark colour, especially on that band, bounded by angled and curved white, defined lines, in which the fenestræ occur. This band is of a dark blackish-brown, passing into a rich chestnut-brown above the fenestræ of the upper wings and on their posterior margin; the inner margin of the lower wings is of this red-brown also; the fenestræ are not bounded by a margin of black scales as in *Att. atlas*, but by ochreous-yellow squamulation; the part of the fenestra towards the base of the wings, which in *Att. atlas* is curved convexly, is in *Att. edwardsii* straight; the fenestra is longer, the white lines on the wings, breaking up the brown so beautifully, are wider, and that on the lower wing is less scalloped than in *Att. atlas*; the margin of the lower wing on the outside has two much-waved lines; the inner is yellow, with thirteen or fourteen undulations, continued on the

upper wing till it leaves off where the wing is dilated into the lobe, which gives the wing its hooked-like character; the lower line is brownish-black, and is straight, except in six places, where the black runs up the nerves triangularly to a point, and meets two of the yellow lobes, which are conjugate."

### 3. ATTACUS CYNTHIA (Drury).

*Phalæna-attacus cynthia*, Drury, Exot. Ins. ii. pl. 6. f. 2; App. p. ii. (1773); Cramer, Pap. Exot. i. p. 62, pl. 39. f. A.

*Phalæna cynthia*, Roxburgh, Trans. Linn. Soc. vii. p. 42. pl. 3; Buchanan, Descr. Dinajpur, p. 214; Helfer, Journ. Asiat. Soc. Beng. vi. p. 45.

*Bombyx cynthia*, Olivier, Enc. Méth. Ins. v. p. 30.

*Samia cynthia*, Hübner, Verz. bek. Schmett. p. 156.

*Saturnia cynthia*, Westwood's ed. Drury's Ins. ii. p. 12, pl. 6. f. 2.

*Attacus cynthia*, Walker, List Lep. Het. B.M. pt. 5. p. 1220.

*Saturnia arrundi*, Royle, Reports on the Paris Universal Exhib. pt. 3. p. 216 (1856).

*Arrindy* or *Arrundi Silkworm Moth*, Roxburgh, Helfer.

*Eria of Assam*, Hugon, J. A. S. Beng. vi. p. 21.

*Eri* or *Eria of Assam*, Royle.

*Hab.* Specimens in Museum, India House, from China, Assam, N. E. India, Thibet, Java.

### 4. ATTACUS RICINI (Boisduval).

? *Phalæna ricini*, Sir W. Jones.

*Saturnia ricini*, Boisduval, Ann. Soc. Entom. France, 3rd ser. ii. p. 755 (1854).

*Attacus lunula*, Walker, List Lep. Het. B.M. pt. 5. p. 1221 (1855).

*Attacus ricini*, Moore, Catal. Lep. Mus. Ind. House, ii. p. 407.

*Hab.* Specimens in the Museum, India House, from N. E. India, Assam; and others in the British Museum from Ceylon.

The specimens from Assam, under examination, are identical with those named *A. lunula* by Mr. Walker, and with others sent from Paris as *A. ricini*. Some of the references to the preceding species doubtless belong to this.

Domesticated in Malta, Piedmont, Tripoli, France, and in the Island of Granada.

The insect known to the Hindoos by the name of Arrindy in some parts, in others Arrundi, appears to be peculiar to the interior parts of Bengal; and, so far as I can learn, to two districts only, viz. Dinagepore and Rungpore, where the natives breed and rear it in a domestic state, as they do the common silkworm. The food of the caterpillar consists entirely of the common *Ricinus*, or *Palma Christi*, which the natives of these districts call Arrindy (hence the name of the insect), and is abundantly reared over every part of India, on account of the oil obtained from the seed.

The late Sir William Jones mentions this insect in a letter to Dr. Anderson, dated 17 May, 1791, under the name of *Phalæna ricini*:—

“Eggs pure white, which hatch in from ten to fifteen days. The larvæ arrive at their full size, which is from  $2\frac{1}{2}$  to 3 inches, in about one month, during which they cast their skins three or four times. They are very voracious. The cocoon, or covering thereof, is white or yellowish, of a very soft, delicate texture; in general about 2 inches long and 3 in circumference, pointed at each end; the perfect insect comes out after a period of from ten to twenty days.”

Mr. Atkinson remarks, that “they are reared in a domestic state, and entirely feed on the *Palma Christi* plant. The cocoons are remarkably soft and white, or yellowish; the filament so exceedingly delicate, as to render it impracticable to wind off the silk; it is therefore spun like cotton. The yarn, thus manufactured, is woven into a coarse kind of white cloth, of a seemingly loose texture, but of incredible durability, the life of one person being seldom sufficient to wear out a garment made of it.”—(Dr. Roxburgh, Trans. Linn. Soc. vii. p. 42, 1804.)

According to Mr. Hugon, the caterpillar of the *Eria* (see Journ. A. S. Beng. vi. pp. 23, 24), in a domesticated state at Assam, “is, when young, about  $\frac{1}{4}$  inch in length, and nearly black; as it increases in size it becomes of an orange colour, with six black spots on each of the segments; the head and legs are black; after the second moult they change to an orange colour; that of the body becomes lighter, in some approaching to white, in others to green, and the black spots gradually become the colour of the body; after the fourth and last moult, the colour is a dirty white or a dark green: the white caterpillars invariably spin red silk, the green ones white. On attaining its full size, the worm is about  $3\frac{1}{2}$  inches long; its colours are uniform and dull; the breathing holes denoted by a black mark,—the moles have become the colour of the body, and have increased to long fleshy points, without the sharp prickles the Moonga worm has; the body has a few short hairs, hardly perceptible. In four days the cocoon is completed. The hill tribes settled in the plains are very fond of eating the chrysalis.

“The Arrindy, Arria, or *Eria* silkworm is reared over a great part of Hindostan, but more especially in the districts of Dinajpur and Ranjpur, in houses, in a domesticated state, and feeds chiefly on the leaves of *Ricinus communis*. The silk of this species has hitherto never been wound off, but people spun it like cotton. It is so productive as to give sometimes twelve broods of spun silk in the year. The worm grows rapidly, and offers no difficulty whatever for an extensive speculation.” (Dr. Helfer, J. A. S. Beng. 1837, p. 45.)

In the Journal of the Agricultural and Horticultural Society of India (vol. ii. pt. 2. p. 61) is an account of the successful experiment of winding off the silk from the cocoon of the *Eria* worm. Some further accounts also appear in the Transactions of the Entomological Society of London for December 1854, and reprinted in the above Agricult. and Horticult. Soc. Journal, vol. ix. pt. 2. p. 29.

“One of the most active and distinguished of the members of the Society of Acclimation, M. Guérin-Méneville, who has been especially interested in the introduction of new silkworms, has recently succeeded

in acclimatizing in France a new silkworm from China, where it lives on the varnish-tree (*Ailanthus glandulosus*). The species is the true *B. cynthia* of Drury (1773), figured for the first time by Dabenton, jun., in his coloured plates, which were published between 1760 and 1765, and raised for some centuries in China, where its silk clothes the people. Roxburgh, in 1804, supposed the *Eria* which is raised in British India to be the same; and this confusion has continued till recently: so that the *Eria* (or 'Arrindy-arria,' as it is called in Hindostan) has gone by the name of *Saturnia cynthia*. The *Eria* is a different species, living on the *Ricinus*.

"The study of the species by Guérin-Ménéville has brought to light differences between the two in the cocoons and the habits of the worms. The cocoons carded give an excellent flock of silk, which is used in China and Bengal for very firm tissues. The colour of the silk is a fine flax-grey; and clothes made of it are not injured by the rain, or oil, and wear long."—(From 'Silliman's Journal,' Nov. 1858; *vide* Ann. N. H. Jan. 1859.)

5. *ATTACUS GUERINI*, Moore. (Annulosa, Pl. LXV. fig. 3.)

*Attacus guerini*, Moore, Catal. Lep. Mus. Ind. House, ii. p. 409 (1858).

May be distinguished from *A. cynthia* and *A. ricini* by its smaller size and darker colour, the fore-wings having the two transverse white lines joined together about the middle, the junction forming a somewhat rounded spot; and by its being *without* the lunate vitreous streak, which is replaced by a small yellowish spot, which spot, in some specimens, is nearly obsolete. Hind-wing with a small rounded, yellowish, slightly vitreous spot.

Expanse from  $3\frac{1}{2}$  to  $3\frac{3}{4}$  inches.

*Hab.* Bengal. In Museum, India House.

The following remarks by M. Guérin-Ménéville appeared in the Annals of Nat. Hist. June 1859, entitled "Fertile Hybrids of two species of *Saturniæ*":—

"Last year I succeeded in getting some females of *Bombyx cynthia* fecundated by males of *Bombyx arrindia*\*, and *vice versa*; and the eggs laid by them produced caterpillars. These caterpillars, reared last autumn, have shown nearly all the characters of *B. cynthia*, which is the wider and more vigorous of the two species. Their cocoons, although resembling a little those of *B. arrindia* by their deeper colour, conducted themselves in the same manner as those of *B. cynthia*; that is to say, being kept in a similar temperature, the moths did not come out in the winter, as those of *B. arrindia* constantly do. However, the influence of this latter species has been felt from this first generation; for, having placed some hybrid cocoons in the reptile-room of the Museum, where the temperature is never below 13° Centigrade, the moths came out at the end of March, whilst those of *B. cynthia* proper, which I had placed by their side for comparison, have not stirred yet. The moths pro-

\* I am in doubt as to what species is here indicated.



duced by this hybridation show on the whole, as their caterpillars have done, more of the character of *B. Cynthia* than of *B. arrindia*. They are larger; their abdomen is brown, with white tufts,—not white, as in *B. arrindia*; the band across their wings is edged with rosy atoms instead of whitish-grey, as in *B. arrindia*: however, they resemble this species inasmuch as their wings are of a browner and deeper colour than those of *B. Cynthia*. The species which predominates physically is *B. Cynthia*; but morally, so to speak, the influence of the other species has been more strongly felt; for the hybrids of the two categories give caterpillars which, although resembling those of *B. Cynthia*, are less wild, or more domestic, which assimilates them to the caterpillars of *B. arrindia*. These hybrids take from *B. arrindia* the faculty of leaving their cocoons earlier, without, however, continually coming out during winter; and it is worthy of note that hybrids obtained from the female *B. Cynthia* and male *B. arrindia* have come out a few days earlier than the opposite hybrids.

“I may add that the hybrids are polyphagous, as nearly all the *Bombyces* are; for they may be fed with teazel-leaves, as well as the ordinary silkworms, which have been fed at all times with lettuce, *Scorzonera*, goat’s-beard, bind-weed, elm, rose-tree, and privet-leaves, &c.”—(Comptes Rendus, April 11, 1859; Reprinted in ‘Annals of Nat. Hist.’ June 1859.)

In conclusion, I beg to add a few references where additional remarks on silk-producing moths, more interesting to the general reader, will be found, viz. in Journ. As. Soc. Beng. 1837, pp. 21, 38; Trans. Linn. Soc. London, vol. vii. p. 33; Journal of the Agri-Horticultural Society of India, vol. ii. pt. 2. p. 88; vol. ix. pt. 3. pp. 259, 391; Journ. As. Soc. Beng. xvi. p. 68; Proc. Entom. Soc. Lond. for Dec. 1854; Journal of the Society of Arts for Feb. 6th, 1857; the translation from the Chinese of the works of Tseu-kwang-k’he, Shanghai, 1849; and the Report on the Raw Products of Southern India in Madras Exhibition, 1858; Dr. Balfour’s Cyclopædia of India; Noland’s History of the British Empire in India, pp. 211, 403.

### 13. A GENERAL REVIEW OF THE GENUS *TEREBRA*, AND A DESCRIPTION OF NEW SPECIES. BY MONS. DESHAYES.

Mr. Hinds, in 1844, published in the ‘Thesaurus Conchyliorum’ a very complete Monograph of the genus *Terebra*. When, ten years afterwards, we studied this beautiful group of Molluscs in the magnificent collection of Mr. Cuming, we did not suppose that the number of species would be considerably augmented; but the actual fact disabused us of this notion, for it was not without surprise we saw the number of species had nearly doubled itself.

Mr. Cuming proposed to put at our disposal all these valuable materials, if we would undertake to publish them; and we recognized

in this generous offer that exalted love of science which has always guided him. For we must say that Mr. Cuming is not only the zealous collector who has had the merit of bringing together the most extensive collection of recent shells in existence, but that, whilst adhering faithfully to the rule he has imposed upon himself, to write nothing himself on Conchology, he has exercised notwithstanding for the last five and thirty years the most favourable influence upon that science.

Whilst on his long and arduous travels, Mr. Cuming has often gathered precious observations on the habits of the Molluscan animals, their localities, the various depths of the sea they live in, and the nature of the bottoms they prefer. These observations, communicated without reserve to authors, have become part and parcel of science, and have shown to other investigators that such an example should be followed, in order to obtain in time competent notions of the geographical distribution of molluscan animals.

This knowledge, in its infancy and still imperfect, will become of the last importance to Geology and Palæontology, when the distribution of beings existing during past geological periods comes to be compared with that of those we now witness; for already the first attempt of Forbes shows the interest attached to these questions, to illustrate which the observations of Mr. Cuming have been of such great value.

Adanson, in 1757, in his 'Voyage to Senegal,' instituted the genus *Terebra*, to include those species which Linnæus afterwards included in his genus *Buccinum*. It is true that Adanson's genus brought together two very distinct forms of mollusks; one group belonging to true *Buccinum*, and to be comprehended within that genus; whilst the other contains species which have been considered by Brugière and Lamarck as typical of the genus *Terebra*, and this genus, so reconstituted, has been recognized by all naturalists.

Notwithstanding this unanimity with respect to the genus, an attempt has been made by Schumacher and supported by Blainville, to make an alteration in its constitution. Schumacher, in fact, proposes to give the name *Terebra* to the bucciniform species, and to call the others by a new generic name re-formed by Brugière and Lamarck. This change might have been brought about if, during the time of Adanson, the genus *Buccinum* had not been established by Linnæus, since which period it has only been necessary to embrace under it the two species erroneously referred to *Buccinum* by Adanson, and in this way the genus becomes naturally constituted.

The nomenclature of Brugière and Lamarck ought therefore to be retained. The inutility of the genus *Subula* of Schumacher is in this manner demonstrated.

Heeding but little the nomenclature established before his time, Humphrey, a man remarkable for the sagacity he has shown in an Essay on the classification of shells, called *Terebra* '*Turritella*,' and proposed the name of *Acus* for the true *Terebra* of Adanson and Brugière.

No one had dreamt of this genus till the Messrs. Adams recently attempted to establish it in their work intitled 'The Genera of

Recent Mollusca.' These naturalists support their views by a fact mentioned first by Blainville, and confirmed by Souleyet, that the animal of *T. maculata* has the tentacles very thin and short, carrying the eyes at their summits. Messrs. Quoy and Gaimard on the contrary prove that in *T. dimidiata*, referred notwithstanding to the genus *Acus* of Humphrey by the Messrs. Adams, the eyes are placed at the middle of the tentacles.

These are the very words of these naturalists ('Zoology of the Voyage of the Astrolabe,' vol. ii. p. 462):—"The animal has a tolerably large head; the distant tentacles are excessively thin and short, and one can hardly perceive *the eyes about the middle of their length.*"

On the subject of the *Terebra*, the same naturalists add some interesting details. "This species (*Terebra subulata*) is figured," they say, "at page 465, to show that the animal does not differ from the preceding (*T. dimidiata*); its head is prolonged into the form of a little muzzle, which disappears when the siphon expands and is put out; the tentacles are bigger and less distinct. We believe that in that one which we saw the eyes were placed altogether at their extremities; this arose probably from the contraction of the points which surmount them."

Hence, according to the facts established by Blainville, Souleyet, and Quoy and Gaimard, there would be in the group of *Acus*, as re-employed by the Messrs. Adams, some species having the eyes at the tip of the tentacles, and others bearing them at the middle of those organs. It also follows that in the *Terebra* proper of the Messrs. Adams, to which *T. subulata* belongs, the eyes appeared situated at the extremity of the tentacles, if we admit the doubt expressed by M. Quoy on the subject of the contraction of the upper ends of the tentacles.

What has just been said will tend to weaken much this division into two genera of the species belonging to the old genus *Terebra* of Lamarck. Before we admit the genus *Acus*, we think it more prudent and wise to await the result of further observations. This seems the more necessary, as in the shells we do not notice any constant character by the help of which we could distinctly and easily separate the genera. There are found a great number of links between the different forms of the aperture of the columella, of the notch, and of the short terminal canal. The external form and the diversity of ornamentation, are repeated from one group to the other. Also, in examining the characters given by the Messrs. Adams, we find that the most important, and that to which these authors attribute the most value, is borrowed from the animal; that is to say, the position of the eyes on the tentacles.

It might, perhaps, be interesting to put forth the various opinions of naturalists upon the relative position to be assigned to the genus which occupies us at present, in a natural arrangement of molluscan animals; but, to show with certainty the opinions successively advanced, it would be necessary to enumerate in detail all the facts already known respecting the organization of the animal, to deduce from these facts the whole of the differences and resemblances with

other known genera, and so by these means to ascertain which is the best of these classifications.

Had it been our task to publish a complete monograph of the genus, we should have prosecuted all the researches necessary for thoroughly illustrating this subject; but, as we are confined to a general review for the sake of placing in the genus a description of a great number of new species, we feel bound to abstain from all which does not immediately concern the task we have undertaken, as the reader may supply what is wanting by consulting the works of the naturalists quoted above.

When we enumerate the species of *Terebra*, published by naturalists of the last century, we are astonished at the small number.

In the 12th edition of the 'Systema Naturæ,' Linnæus had put together only ten in the 7th section of his genus *Buccinum*, which includes only *Terebra*.

Martini and Chemnitz in their great work added a few species. Schröter, having observed in the old plates a considerable number of figures that had been overlooked, separated them carefully from each other, and placed them in the genus after the Linnæan species, but only distinguished them by numbers, so preparing the way for Gmelin, who unscrupulously and without quoting him, contented himself with putting a specific name to each of Schröter's numbers, and borrowing his synonyms, good and bad.

A deep study of the two works enabled me some years ago to discover the unscrupulous plagiarism of Gmelin.

In the work of Gmelin, the 13th edition of the 'Systema Naturæ,' the number of species was considerably increased, for we find as many as forty-three. But this number would be greatly diminished if we submitted all the species to a strict examination, and we shall find that, besides a number of species absolutely unascertainable, we have turreted shells of *Melampus*, *Melania*, *Fusus* or *Pleurotoma*, *Ireton*, *Buccinum*, *Cerithium*, *Pyrula*, *Achatina*, *Pyramidella*, and *Turritella*.

If from this miserable list we suppress duplicates, we shall find the number of true *Terebræ* (whose synonymy Gmelin had talent enough to make most incorrect) will exceed but little that of the 12th edition of the 'Systema Naturæ.'

Lamarck has doubled the number of the species of Linnæus in his 'Histoire Naturelle des Animaux sans Vertèbres;' but at the end of the genus he places two which do not possess the generic characters, and should be taken from the *Terebræ* and put with *Buccinum*, where we have already placed them.

Our travelling naturalists, from the great scientific expeditions they have undertaken, have been enabled to enrich the public collections with a great number of new species. Messrs. Quoy and Gaimard contributed a few of them collected during the voyage of the 'Astrolabe.' M. Kiener added some others in his 'Species générales et Iconographie des Coquilles vivantes,' and carried up to thirty-five only the number figured and described. Shortly afterwards Dr. Gray described summarily in the 'Proceedings of the Zoological Society



of London,' in 1834, twenty new species, among which some remained doubtful; and lastly Mr. Hinds, in 1843, in the work we have previously cited, after having described fifty new species, coming almost all from the Cumington Collection, gave a prodromus of a complete monograph of the genus, and raised the number of the species known to one hundred and eight. This Monograph, accompanied by very good figures, was published by the author the following year in the 'Thesaurus Conchyliorum' of Mr. Sowerby. This very considerable number was still farther augmented by Messrs. Adams and Reeve, who described ten species.

Since the publication of these two works, Mr. Cuming has continually added to his collection all the new species he could obtain possession of. We remark amongst his recent acquisitions some objects most worthy of attention, on account of their elegant ornamentation and colours, as also the novelty of their forms. To these precious materials put at our disposal, we have joined those we had collected ourselves, and M. Edouard Verreaux has permitted us to add some other species in order to render our task more complete.

Thanks to so favourable a combination, we are able now to add seventy-five species to those already known, which has raised the number to nearly two hundred, if we exclude duplicates and doubtful species; for, had we enumerated indiscriminately all the names given, they would have amounted to more than two hundred.

We are happy to do justice to the sagacity displayed by the Messrs. Adams in bringing together and grouping the species of the genus *Terebra* according to their natural affinities. Before we had consulted their work we had arrived at nearly similar conclusions. It is useful and even necessary to multiply, as much as the characters permit, the subdivisions, when so great a number of species have to be arranged. By means of this artifice it becomes more easy to naturalists to determine the characters of the species they possess, —an ungrateful and repulsive task, when they are obliged in every case to wade through nearly two hundred descriptions.

If we had had at our disposal all the species known we should have essayed to divide them by means of the dichotomic method so admirably made use of by Lamarck in the study of plants, for figures can never supply the place of natural objects. Those published by Mr. Sowerby in the 'Thesaurus Conchyliorum' to accompany Mr. Hind's Monograph, have the inconvenience of showing the large species reduced in size and making the smaller of their natural size, whilst, to show their characters well, they should have been considerably enlarged.

In the general catalogue of the species of the genus we shall not repeat the observations already published by us in the 2nd edition of the work of Lamarck, the 'Histoire Naturelle des Animaux sans Vertèbres,' vol. x. p. 236 and following. We applied ourselves in that work to rectify and complete the synonymy of the known species. An attentive comparison of our synonymy with that of Linnæus, Gmelin, and others, will show that we have not spared pains to obtain more favourable results than our predecessors. We shall not therefore

have to repeat here the same labour, but merely to refer to the synonymy only where it is absolutely necessary to guide the reader in his search after species.

Thirty-seven new species have been described and figured in the 'Zeitschrift für Malacologie' for 1846; they were named and placed where they should stand in the completed series. Other species equally new will be described according to natural characters which link them with their congeners: thus will be found completed the series of species that can be at this day admitted into the genus.

Besides the admissible species, there will remain sixty or more names introduced from different motives into the genus, and which we ought to reject. Of these we shall make an alphabetical list, and introduce a few brief observations to show why we have rejected them. Some are names repeated, others are uncertain species insufficiently described or badly figured, and the rest have been given to species not belonging to the genus.

The *Terebræ* have the closest relation to *Buccinum*, as Conchologists well know, and it fell to Lamarck to introduce two species of true *Buccinum* amongst the *Terebræ*. And the reverse has also taken place, for some true *Terebræ* have been ranged with *Buccinum*. These facts show how nearly these two genera are related; and so it seems natural to place first the species most nearly allied to *Buccinum*, and lastly those which are farthest removed from them.

## Genus TEREBRÆ.

### PREMIÈRE DIVISION (*Acus*, Humphrey).

#### A. *Coquille buccinoïde* (Sous-genre *Euryta*, A. Adams).

##### 1. TEREBRÆ ACICULATA, Lamk.

*Buccinum aciculatum*, Lamk. An. s. vert. 2<sup>e</sup> ed. t. 10. p. 175. no. 41.

*Terebræ aciculata*, Hinds, Thes. Conch. p. 183, pl. 45. f. 104.

*Hab.* Acapulco; Xipixapi.

##### 2. TEREBRÆ COSENTINI, Phil.

*Terebræ cosentini*, Philippi, Enum. Moll. Sicil. t. 1. p. 227. pl. 11. f. 29; Hinds, Thes. Conch. p. 184. pl. 45. f. 107.

*Hab.* Tarento (*Philippi*).

Après avoir donné ce nom à cette espèce dans le premier volume de ses Mollusques de Sicile, M. Philippi la réunit à la *T. aciculata* dans le second volume du même ouvrage. Nous aurions suivi cet exemple si déjà plusieurs fois on ne nous avait mentionné cette forme dans le Méditerranée. Avant de supprimer l'espèce il est convenable d'attendre de nouvelles observations.

3. *TEREBRA NODOSOPPLICATA*, Dunker.

*Terebra nodosoplicata*, Dunker, Zeits. für Malac. 1853, p. 110.  
no. 37.

*Hab.* — ?

4. *TEREBRA FULGURATA*, Phil.

*Terebra fulgurata*, Phil. Zeits. für Malac. 1846, p. 53. 1847,  
p. 181, no. 14.

*Terebra arguta*, Gould, Mex. et Calif. Shells, p. 7. pl. 14. f. 19.

*Hab.* California ; Mazatlan ; Guatemala.

5. *TEREBRA TIARELLA*, Desh.

*T. testa elongata, turrita, angusta, acuminata, fulva, anfractibus latis, primis longitudinaliter tenue plicatis, alteris ad suturam nodoso-crenatis, transversim obsolete rare striatis, striis exilibus incisissimis; ultimo anfractu elongato, cylindraceo; apertura intus fulva, elongata, angusta, canali brevi terminata; columella recta, cylindracea, contortula, intus uniplicata.*

Var.  $\beta$ . *Testa castaneo fuscescente, tuberculis pallidioribus.*

Var.  $\gamma$ . *Testa omnino candida.*

Long. 32 mill., larg. 8.

*Hab.* Cape Natal.

Collection Cuming.

B. *Coquille alongée subulée.*6. *TEREBRA CRENULATA*, Lamk.

*Buccinum crenulatum*, Linn. Syst. Nat. ed. 12. p. 1205.

Var.  $\beta$ . *Buccinum varicosum*, Gmel. p. 3505. no. 165 ; Seba, Mus.  
t. 3. pl. 56. f. 17.

*Hab.* Madagascar ; Ocean de l'Inde, &c.

6. *TEREBRA FIMBRIATA*, Desh.

*T. testa elongato-conica, basi lata, apice acuminata, castaneo-fuscescente alboque marmorata, ad marginem superiorem lineis brevibus, castaneis fimbriata, punctulis castaneis, biseriatis distantibus, in ultimo anfractu triseriatis ornata; anfractibus latis, planis, sulco impresso divisissimis; primis tenue plicatis, alteris lævigatis; margine suturali convexiusculo, obsolete noduloso; nodulis sæpius albis; apertura elongato-angusta, subquadrata, intus fusca, basi late emarginata; columella alba cylindracea.*

Long. 88 mill., larg. 19.

*Hab.* — ?

Collection Cuming et la mienne.

8. *TEREBRA INTERLINEATA*, Desh.

*T. testa elongato-turrita, conica, valde acuminata, alba pallide flavicante, maculis rufis irregularibus nubeculata et punctulis saturatoribus biseriatim et in ultimo anfractu triseriatim dispositis; anfractibus octodecim planis sulco inæqualiter divisus, primis plicatis, ultimis obsolete plicatis; margine suturali albo, plicato, linea rufa plicis interposita; ultimo anfractu basi convexo, lævigato, canali brevi profunde emarginato terminato; apertura elongato-subquadrata, albida; columella albida, cylindracea, uniplicata.*

Long. 60 mill., larg. 13.

*Hab.* Les Iles Sandwich.

Collection Cuming.

Elle a des rapports avec le *T. fimbriata*, avec des caractères spécifiques qui lui sont propres.

9. *TEREBRA PATAGONICA*, d'Orb.

*Terebra patagonica*, d'Orb. Voy. en Amér. Moll. p. 442. pl. 62. f. 1.

✓ 10. *TEREBRA TROCHLEA*, Desh.

*T. testa elongato-subulata, turrita, apice acutissimo, fulvo-fuscescente, albo maculata et flammulata, maculis albis multo minoribus; anfractibus latis, longitudinaliter plicatis, sulco lato profundeque in duas areas bipartitis; area angustiore, depressa, minus elevata, nodulosa, in anfractibus ultimis nodulis evanescentibus; apertura ovato-angusta, basi dilatata, late emarginata; columella alba, uniplicata.*

Long. 69 mill., larg. 13.

*Hab.* Zanzibar.

Collection Cuming et la mienne.

11. *TEREBRA SOWERBYANA*, Desh.

*T. testa conico-elongata, albida vel pallide rufescente; anfractibus latis, planis, sulco impresso divisus, longitudinaliter undato-plicatis, plicis distantibus, angulatis, interstitiis obsolete bi- vel tri-striatis; ultimo anfractu elongato, basi depressiusculo, striis transversalibus distantibus notato; apertura parum obliqua, elongato-angusta, subquadrangulari, antice canali breve terminata; columella valde contorta, profunde biplicata.*

Long. 56 mill., larg. 12.

*Hab.* La mer de Gambie.

Collection Cuming.

12. *TEREBRA REEVEI*, Desh.

*T. testa elongato-subulata, omnino pallide albo-flavidula; anfractibus numerosis, latis, sulco profundo angusto divisus, suturis profundis, crenulatis, longitudinaliter tenue et regula-*



*riter plicatis ; apertura elongato-angusta, subquadrata, late profundeque emarginata ; columella candida, cylindracea, uniplicata, angulo oblique descendente basi circumdata.*

Long. 92 mill., larg. 11.

*Hab.* Les Iles Moluques.

Collection Cuming.

Belle espèce voisine de la *T. duplicata*, mais plus courte et plus sombre ; elle rappelle un nom cher à la science Conchyliologique.

### 13. TEREBRA GOULDI, Desh.

*T. testa elongato-subulata, crassiuscula, albo-lutescente ; anfractibus planulatis, latis, transversim sulco inæqualiter bipartitis ; area suturali nodoso-plicata, nodulis albis, interstitiis fusciscentibus ; altera latiore tenue plicata, zonula fusciscente superne distincta ; ultimo anfractu elongato, zonulis duabus fuscis ornato ; apertura elongato-subquadrata ; columella alba, erecta, margine dextro parallela, cylindracea, extus angulo acuto separata.*

Long. 70 mill., larg. 18.

*Hab.* Les Iles Sandwich.

Collection Cuming et la mienne.

### 14. TEREBRA SENEGALENSIS, Lamk.

*Terebra senegalensis*, le Faval, Adanson, Voy. au Senegal, p. 54, pl. 4. f. 5 ; Hinds, Thes. Conch. p. 160. no. 27. pl. 41. f. 11-14.

*Hab.* Sénégal.

### 15. TEREBRA CINGULA, Kien.

*Terebra cingula*, Kiener, Icon. des Coq. Viv. p. 30. no. 25. pl. 9. f. 19.

*Hab.* Sénégal.

### 16. TEREBRA FATUA, Hinds.

*Terebra fatua*, Hinds, Thes. Conch. p. 58. no. 20. pl. 42. f. 28.

*Hab.* St. Christophe (Indes occidentales).

### 17. TEREBRA FESTIVA, Desh.

*T. testa elongato-conica, angusta, acuminata, fulva ; anfractibus latis, sulco impresso divisus ; margine suturali lato, plicis nodulosus, crassiusculus, albicantibus notato, interstitiis castaneis ; altera parte anfractuum tenue et regulariter plicata, interstitiis simplicibus, obsolete maculis pallide castaneis, biseriatis, in ultimo anfractu triseriatim picta ; ultimo anfractu elongato ; apertura oblonga, angusta, late emarginata.*

Long. 39 mill., larg. 8.

*Hab.* Sénégal.

Collection Cuming et la mienne.

18. *TEREBRA SPECIOSA*, Desh.

*T. testa elongato-turrita, apice acuminato, flava, in margine anfractuum castaneo regulariter maculata; longitudinaliter tenue plicata, anfractibus latis, planiusculis, sulco impresso, inæqualiter bipartitis; margine suturali, late plicato, albescente; apertura elongato-angusta, subquadrata, basi profunde marginata; columella acuta, conoidea, extus angulo angusto, circumdata.*

*Hab.* — ?

Collection Cuming et la mienne.

Par sa forme et sa coloration cette coquille se rapproche de la *Terebra festiva* : elle s'en distingue par plusieurs bons caractères ; les tours sont élargis, peu convexes ; le bouelet de la suture est assez large, peu proéminent, et il présente avec le reste de la surface un contraste assez remarquable : on y remarque en effet des plis larges, réguliers, blanchâtres, entre chacun desquels se dessine une tache d'un beau brun. Ces plis, au lieu d'être en même nombre que ceux du reste de la surface, occupent un espace beaucoup plus large, de telle sorte que chacun d'eux reçoit deux ou trois des plis qui parcourent la surface supérieure des tours.

Long. 39 mill., larg. 7.

19. *TEREBRA DILLWYNII*, Desh.

*T. testa elongato-conica, subulata, in medio ventricosiuscula, pallide fulva; anfractibus quindecim, planulatis, sulco impresso divisis, regulariter costellatis, lævigatis; margine suturali lato, plicis albulis maculisque castaneis interstitialibus notato; ultimo anfractu breviusculo, obtuso; apertura quadrata, breviuscula, antice late profundeque emarginata; columella brevi, fusca, cylindracea, extus angulo acutissimo circumdata.*

Long. 40 mill., larg. 9.

*Hab.* Les mers du Japon.

Collection Cuming et la mienne.

20. *TEREBRA RAPHANULA*, Lamk.

*Terebra raphanula*, Kiener, Icon. des Coq. Viv. p. 21, no. 16, pl. 10. f. 20 ; Hinds, Thes. Conch. p. 159. no. 23. pl. 44. f. 94.

*Hab.* Amboine.

En rapprochant les figures que nous citons, on remarque entre elles des différences assez considérables pour faire supposer qu'elles appartiennent à deux espèces distinctes.

21. *TEREBRA MARMORATA*, Desh.

*T. testa elongato-turrita, angusta, apice acuto, fusco alboque alternatim et irregulariter maculata, marmorata, ad suturam maculis intensioribus seriatim dispositis; anfractibus primis violaceo-lividis, ultimo ad peripheriam albo cincto; anfractibus angustis, longitudinaliter et regulariter costatis in ultimis cos-*

*tulis evanescentibus, transversim striato-punctatis, linea punctata profundiore marginatis, margine plicato; ultimo anfractu brevi, basi quinque-sulcato, convexo; apertura ovato-angusta, utrinque attenuato, antice canali angusto, profundo, brevi terminato.*

Long. 41 mill., larg. 8.

*Hab.* Moreton Bay.

Collection Cuming.

22. *TEREBRA CHLORATA*, Lamk.

*Buccinum maculatum*, var.  $\beta$ , Gmel. p. 3499. no. 130.

*Terebra chlorata*, Kiener, Icon. des Coq. Viv. p. 24. pl. 6. f. 2.

*Hab.* Iles Seychelles.

23. *TEREBRA EBURNEA*, Hinds.

*Terebra eburnea*, Hinds, Thes. Conch. p. 166. no. 45. pl. 45. f. 123.

*Hab.* Iles Seychelles.

24. *TEREBRA PUNCTICULATA*, Desh.

*T. testa elongato-conica, crassiuscula, acuminata, omnino candida, longitudinaliter plicata, interstitiis plicarum profunde puncticulatis; plicis regularibus, depressis, latis, obtusis; anfractibus circiter quindecim angustis, convexiusculis, linea transversali puncticulata subæqualiter divis; ultimo basi convexo, tenue sulcato; apertura minima, ovato-acuminata, basi angustata; columella conica, uniplicata, basi extus angulo circumdata.*

Long. 25 mill., long. 6.

*Hab.* — ?

Ma Collection.

Espèce facile à distinguer par les profondes fourbisations situées entre les plis longitudineaux.

25. *TEREBRA MACULATA*, Lamk.

*Buccinum maculatum*, Linn. Syst. Nat. ed. 12. p. 1205.

*Acus columna trajana*, Humphrey, Mus. Calonn. p. 31. no. 865.

*Subula maculata*, Blainv. Malac. pl. 16. f. 2.

*Terebra maculata*, Kiener, Icon. des Coq. Viv. p. 4. no. 1. pl. 1. f. 1.

*Hab.* Iles Moluques.

26. *TEREBRA STRIGATA*, Sow.

*Terebra strigata*, Sow. Tank. Cat. App. p. 23.

*Buccinum elongatum*, Gray, Wood, Ind. Test. Sup. pl. 4. f. 25.

*Terebra zebra*, Kieuw, Icon. des Coq. Viv. p. 5. no. 2. pl. 3. f. 5.

*Terebra flammea*, Lesson, Illus. Zool. pl. 18.

*Hab.* Panama, Realejo.

27. *TEREBRA ALBIDA*, Gray.

*Terebra albida*, Hinds, Thes. Conch. p. 158. no. 21. pl. 43. f. 56.

*Hab.* Nouvelle Hollande.

28. *TEREBRA MUSCARIA*, Lamk.

*Terebra muscaria*, Lamk. Anim. s. Vert. 2 ed. t. 10. p. 241 ;  
Hinds, Thes. Conch. p. 151. no. 11. pl. 41. f. 17-20, pl. 42. f. 41.  
*Hab.* Iles de la Société, etc.

29. *TEREBRA TIGRINA*, Desh.

*Terebra tigrina*, Desh. dans Lamk. au. s. Vert. 2 ed. t. 10. p. 253.  
*Buccinum tigrinum*, Gmel. p. 2602.  
*Buccinum felineum*, Dillw. Cat. t. 2. p. 644. no. 135.  
*Terebra muscaria*, var.  $\beta$ , Kiener, Icon. des Coq. Viv. pl. 3. f. 4.  
*Hab.* Ocean indien.

30. *TEREBRA DIMIDIATA*, Lamk.

*Buccinum dimidiatum*, Linn. Syst. Nat. ed. 12. p. 1206.  
*Subula dimidiata*, Schumacher, Nouv. Syst. p. 233.  
*Terebra dimidiata*, Kiener, Icon. des Coq. Viv. p. 6. no. 3. pl. 2.  
f. 2.  
*Hab.* Ocean indien, Moluques, Nicobar.

31. *TEREBRA SPLENDENS*, Desh.

*T. testa elongato-subulata, turrita, angusta, apice acutissimo, nitente, lævigata; anfractibus latis, convexiusculis, sulco impresso bipartita, primis tenue plicatis; area marginali paulo depressiore, unicolore, flavido-rubente; area altera latiore, maculis flammulatis alternatim albis et flavido-rubescensibus ornata; apertura obliqua, semi-ovata, angusta; basi late emarginata; columella parumper obliqua, intus plana, basi extus angulo acuto circumdata.*  
Long. 79 mill., larg. 12.  
*Hab.* Les mers de la Chine.  
Ma Collection.

32. *TEREBRA PURA*, Desh.

*T. testa elongato-subulata, angusta, candida, nitente, eburnea; anfractibus latis, vix convexiusculis, sulco impresso, obsoleto, divisus, primis tenue plicatis, alteris lævigatis vel substriatis, ultimo elongato, attenuato; apertura elongato-angusta, antice late emarginata, columella subcylindræa, extus angulo crasso, decurrente soluta.*  
Long. 69 mill., larg. 11.  
*Hab.* Zanzibar.  
Collection Cuming.

33. *TEREBRA GLABRA*, Desh.

*T. testa turrito-subulata, acuminata, albida, polita, nitida, im-maculata, aliquantisper flavicante; anfractibus numerosis, angustis, planulatis, sulco impresso divisus, ultimo brevi, primis*



*tenue plicatis, alteris lævigatis; margine suturali paululum prominulo et convexo, ad suturam crenato, in sulco punctato-crenato; apertura elongato-angusta, antice canali brevi terminata, columella contortula, brevi, cylindracea.*

Long. 70 mill., larg. 13.

*Hab.* Les mers de la Chine.

Ma Collection.

#### 34. TEREBRA BUCCINULUM, Desh.

*T. testa elongato-turrita, brevicula, acuminata, albo-griseola; anfractibus convexiusculis, latis, integris, ad suturas tenue longitudinaliter plicatis, transversim sub lente minutissime striatis; apertura ovato-oblonga, ad extremitates attenuata, antice profunde emarginata; columella concava, brevi, uniplicata, extus tristriata, basi margine angusto obtuso circumdata.*

Long. 37 mill., larg. 10.

*Hab.* La côte orientale de l'Australie.

Collection Cuming.

#### 35. TEREBRA HASTATA, Kiener.

*Buccinum hastatum*, Gmel. p. 3502. no. 144.

*Terebra hastata*, Kiener, Icon. des Coq. Viv. p. 22. no. 17. pl. 10.

f. 23.

*Terebra costata*, Menke, Synops. p. 84.

*Hab.* — ?

#### 36. TEREBRA SOLIDA, Desh.

*T. testa elongata, oblonga, solida, obesula, in medio ventricosa, apice acuto, albo-eburnea; anfractibus planis, contiguis, longitudinaliter plicatis, in primis plicis profundioribus, in ulla obsolete, linea pallida translucida in medio bipartitis; ultimo anfractu elongato, attenuato, transversim trifasciato; apertura elongato-angusta, basi late profundeque emarginata; columella crassa, superne uniplicata.*

Long. 30 mill., larg. 8.

*Hab.* Le Japon.

Collection Cuming et la mienne.

#### 37. TEREBRA CRASSULA, Desh.

*T. testa elongata, subfusiformi, crassa, solida, alba, ad apicem flavida, longitudinaliter plicata, plicis regularibus, obliquatis, undulosis; sutura regulariter crenulata; ultimo anfractu elongato, cylindraceo; apertura elongato-angusta, subquadrata, basi late profundeque emarginata; columella crassa, conica, superne uniplicata, extus sulco impresso marginata.*

Long. 27 mill., larg. 7.

*Hab.* — ?

Ma Collection.

38. *TEREBRA OBESA*, Hinds.

*Terebra obesa*, Hinds, Thes. Conch. p. 182. no. 94. pl. 45. f. 106.  
*Hab.* — ?

39. *TEREBRA CIRCUMCINCTA*, Desh.

*T. testa elongato-turrita, acuminata, solida, alba, strigis nonnullis raris flavidulis irregulariter sparsa; anfractibus vix convexiusculis, transversim quadrisulcatis, sulcis impressis, multipunctatis; in ultimo anfractu sulcis novem; apertura elongata, angusta, subquadrata, antice anguste emarginata; columella crassa, brevi, uniplicata.*

Long. 40 mill., larg. 8.

*Hab.* La Mer Rouge.

Collection Cuming.

C. *Coquille subulée, tours aplatis, conjoints, le plus souvent striés sur la suture.*

(a.) *Ouverture étroite.*

1. *Stries fines sur la suture.*

40. *TEREBRA LANCEATA*, Lamk.

*Buccinum lanceatum*, Linn. Syst. Nat. ed. 12. p. 1206.

*Terebra lanceata*, Hinds, Thes. Conch. p. 178. no. 82. pl. 43.  
 f. 52.

*Hab.* Taïti, Ile de France, Moluques.

41. *TEREBRA PENICILLATA*, Hinds.

*Terebra lanceata*, var., Kiener, Icon. des Coq. Viv. pl. 10. f. 22 a.

*Hab.* Iles Seychelles.

42. *TEREBRA VENOSA*, Hinds.

*Terebra lanceata*, var., Kiener, Icon. des Coq. Viv. pl. 10. f. 22 b.

*Hab.* — ?

43. *TEREBRA ALBULA*, Menke.

*Terebra albula*, Menke, Moll. Nov. Holl. Spec. p. 30. no. 163 ;  
 Hinds, Thes. Conch. p. 182. no. 93. pl. 45. f. 126.

*Hab.* Nouvelle Hollande.

44. *TEREBRA INCOLOR*, Desh.

*T. testa elongato-turrita, subfusiformi, paulo ventricosa, crassa, solida, candidissima; anfractibus planulatis, primis longitudinaliter plicatis, alteris plicis breviusculis ornatis, in suturam crenulatis; apertura prælonga, ovato-attenuata; columella brevi, crassa, subcylindræa, late profundeque emarginata.*

Long. 34 mill., larg. 8.

*Hab.* Iles Philippines.

Collection Cuming.

Par sa forme générale cette coquille se rapproche de la *Terebra hastata* de Lamk. ; elle avoisine également notre *Terebra crassula*. Atténuée au sommet elle est légèrement ventral dans le milieu ; ses tours sont très-nettement séparés, ils sont aplatis ou très-médiocrement convexes. Sur les premiers s'étendent d'une suture à l'autre des plis longitudinaux simples et droits ; bientôt ces plis n'atteignent plus que la partie inférieure des tours ; le reste de la surface est lisse ; la suture est crenelée avec beaucoup de régularité. Le dernier tour est allongé, cylindracé ; l'ouverture, très-longue et très-étroite, est largement échancrée à la base. La columelle est plus courte que le bord droit.

45. *TEREBRA CASTA*, Hinds.

*Terebra casta*, Hinds, Thes. Conch. p. 163. no. 42. pl. 44. f. 84.

*Hab.* Philippines.

46. *TEREBRA DISPAR*, Desh.

*T. testa elongato-subulata, angusta, albo-flavidula, aliquantisper griseo-fasciata, longitudinaliter tenue plicata, transversim acutissima striata; anfractibus numerosis, planulatis, continuis, plicis in medio evanescentibus; apertura elongato-angusta; columella brevi, acuta, late profundeque basi emarginata.*

Long. 29 mill., larg. 6.

*Hab.* — ?

Ma Collection.

47. *TEREBRA BIPARTITA*, Desh.

*T. testa elongato-acuminata, subfusiformi, crassa, solida, albo griseoque transversim bipartita; anfractibus convexiusculis, longitudinaliter plicatis, ad suturam crenulatis, plicis superne evanescentibus; ultimo anfractu elongato-attenuato, basi late profundeque emarginato; apertura elongato-angusta, superne attenuata, intus flavidula.*

Long. 22 mill., larg. 5.

*Hab.* Iles Sandwich.

Collection Cuming.

48. *TEREBRA APICINA*, Desh.

*T. testa elongato-angusta, apice acutissimo, alba vel flavidula, ad suturam fasciola fuscula, castaneo-punctata; anfractibus numerosis, planis, primis violaceo-lividis, longitudinaliter plicatis, plicis obliquis superne evanescentibus; ultimo anfractu apice attenuato, canali brevissimo terminato, basi late profundeque emarginato; apertura alba, ovato-angusta, utrinque attenuata; labro tenui, convexo; columella brevi, angulo acuto basi circumdata.*

Long. 22 mill., larg. 5.

*Hab.* Singapore.

Collection Cuming.

49. *TEREBRA BACILLUS*, Desh.

*T. testa elongato-angusta, subulata, albo-cornea vel atrata, longitudinaliter tenue plicata, plicis superne evanescentibus; anfractibus numerosis, angustis, planis, continuis, sutura vix distinctis, ultimo brevi, attenuato; apertura minima, superne acute angulata, basi dilatata; columella nigrescente, brevi, late profundeque emarginata.*

Long. 23 mill., larg. 5.

*Hab.* Iles Sandwich.

Collection Cuming.

50. *TEREBRA DUNKERI*, Desh.

*Terebra eburnea*, Desh. 1853 (nec Hinds, 1844), Zeits. für Malac. 1853, p. 96. no. 35.

*Hab.* —?

51. *TEREBRA CUSPIDATA*, Hinds.

*Terebra cuspidata*, Hinds, Thes. Conch. p. 181. no. 90. pl. 45. f. 128.

*Hab.* Côte d'Afrique.

52. *TEREBRA LACTEA*, Desh.

*T. testa minima, elongato-turrita, angusta, apice acutissimo, candida, ad suturam lactea, opaca, longitudinaliter tenue plicata; anfractibus planis, ad suturam anguste et obsolete marginatis, margine simplici, primis nigris; ultimo anfractu brevi, basi attenuato, lævigato; apertura minima, brevissima, ad angulum superiorem valde angustata, paullo callosa, basi dilatata, profunde lateque emarginata.*

Long. 21 mill., larg. 4.

*Hab.* Iles Sandwich.

Collection Cuming et la mienne.

53. *TEREBRA TRAILLII*.

*T. testa minima, elongato-acuminata, subulata, apice acutissimo, fulva eleganter transversim griseo-fasciata, in ultimo anfractu fasciis duabus; anfractibus planis, continuis, longitudinaliter tenue semiplicatis; apertura minima, triangulari, inferne attenuata, superne dilatata, late profundeque emarginata; columella conoidea, macula fusca notata, callo albo angusto extus circumdata.*

Long. 23 mill., larg.  $4\frac{1}{2}$ .

*Hab.* Vasigapatam, Océan Indien.

Collection Cuming.

Charmante petite coquille appartenant au même groupe que les *semiplicata*, *bipartita*, *apicina*, &c., mais très-distincte de toutes ses congénères; allongée, étroite, très-aigüe au sommet; ses tours sont plans et conjoints; ils sont ornés de nombreux plis longitudinaux qui naissent à la suture et disparaissent vers le milieu des tours.



La coloration est remarquable : sur un fond d'un beau jaune fauve, tirant un peu à l'orangé, se dessine au-dessus de la suture une large fascie blanche partagée en deux parties presque-égales par un ruban étroit d'un gris ferrugineux sombre : une fascie de la même couleur occupe la base du dernier tour.

54. *TEREBRA MERA*, Hinds.

*Terebra mera*, Hinds, Thes. Conch. p. 184. no. 102. pl. 45. f. 108, 114.

*Hab.* Détroit de Malacca.

2. *Plis continus d'un tour à l'autre.*

55. *TEREBRA VERREAUXI*, Desh.

*T. testa elongato-subulata, nitidissima ; anfractibus latis, planis, continuis, indivisis, plicis appressis, parum obliquis, eleganter regularibus, utrinque sutura sculptis ; apertura elongato-angusta, utrinque attenuata ; labro tenui, in medio productiore ; columella alba, cylindracea, obsolete uniplicata, basi extus marginata ; colore pallide flavescente, ad suturam fasciola alba, punctis castaneo-rubris ornata ; ultimo anfractu fasciola alba altera circumdato.*

Long. 38 mill., larg. 9.

An eadem ac *Terebra striatula*, Kiener (non Lamk.), Icon. des Coq. Viv. pl. 9. f. 18 ?

*Hab.* — ?

Ma Collection, communiquée par M. Verreaux.

56. *TEREBRA ARGENVILLII*, Desh.

*T. testa elongato-subulata, pallide rubro-violascente, ad suturam albo-fasciata, rubro eleganter punctata ; anfractibus numerosis, planis, longitudinaliter costulatis, ad suturam crenulatis ; ultimo anfractu elongato, fasciola pallida in medio partito ; apertura elongato-angusta, utrinque attenuata, castaneo-rubescence ; labro tenui, recto ; columella cylindracea, extus marginata, apice acuminata.*

Long. 35 mill., larg. 6½.

*Hab.* — ?

Ma Collection.

57. *TEREBRA CONTINUA*, Desh.

*T. testa elongato-acuminata, nitida, albo-flavida vel carneola, longitudinaliter regulariterque plicata ; anfractibus latis, planis, continuis, sutura impressa vix separatis ; ultimo anfractu elongato, basi attenuato ; columella alba, brevi, conoidea ; apertura elongato-angusta, utraque extremitate attenuata ; labro tenui, recto.*

Long. 31 mill., larg. 7.

*Hab.* — ?

Collection Cuming et la mienne.

58. *TEREBRA ACUMEN*, Desh.

*T. testa elongato-turrita, angustissima, apice acutissimo, castaneo-cinnamomea; anfractibus planulatis, longitudinaliter plicatis, plicis appressis, simplicibus, suturis undulatis, fasciola alba, rubro-punctata ornatis; ultimo anfractu fasciola alba in medio bipartito; apertura elongato-angusta, intus pallide castanea, utrinque attenuata; columella cylindracea, simplici, basi anguste profundeque emarginata.*

Long. 22 mill., larg. 3.

*Hab.* — ?

Collection Cuming et la mienne.

Petite espèce remarquable avoisinant le *Terebra argenvillei* ainsi que le *matheroniana*, mais différente de l'une et de l'autre par la taille, la coloration et les autres caractères spécifiques.

59. *TEREBRA CONCINNA*, Desh.

*Terebra concinna*, Desh. dans Lamk. An. s. Vert. ed. 2. x. p. 259 ; D'Argenville, Conch. pl. 11. f. R.

*Buccinum strigilatum*, var.  $\beta$ . ex parte Gmel. p. 3501.

*Buccinum concinnum*, Dillw. Cat. t. ii. p. 647. no. 144.

*Hab.* — ?

60. *TEREBRA MATHERONIANA*, Desh.

*T. testa minima, elongato-angusta, acuminata, nitidissima, castanea, ad suturam fasciola angusta alba atro-punctata ornata; anfractibus planiusculis, longitudinaliter plicatis, plicis crassis rectis, in ultimo anfractu evanescentibus; ultimo anfractu elongato, ad aperturam coarctato, in medio fasciola alba bipartito; apertura minima, angusta, basi dilatata, intus castanea.*

Long. 18 mill., larg. 3.

*Hab.* Taïti.

Ma Collection.

61. *TEREBRA SALLEANA*, Desh.

*T. testa elongato-subulata, angusta, apice acuminato, fusco-fuliginosa; anfractibus subplanis, ad suturam semiplicatis, plicis albicantibus, interstitiis fusco-castaneis exilissimis, sub lente transversim striato-punctatis; ultimo anfractu brevi, ad peripheriam fasciola albicante cincto; apertura brevi, subtri-gona, castanea; columella cylindracea, extus alba, basi late profundeque emarginata.*

Long. 24 mill., larg. 5.

*Hab.* Mexico (*Sallé*).

Collection Cuming.

62. *TEREBRA CALIGINOSA*, Desh.

*T. testa elongato-subulata, angusta, castaneo-grisea, livida, lon-*

*gitudinaliter regulariterque acute costata ; anfractibus planis, conjunctis, linea impressa vix perspicua, inæqualiter divisis, interstitiis costularum obsoletissime transversim striatis ; ultimo anfractu elongato ; apertura minima, ovato-attenuata, fusca, canali brevi latoque terminata ; columella cylindræa, extus angulo acuto marginata.*

Long. 30 mill., larg. 6.

*Hab.* Iles Philippines.

Collection Cuming.

63. *TEREBRA NITIDA*, Hinds.

*Terebra nitida*, Hinds, *Thes. Conch.* p. 164. no. 40. pl. 45. f. 103.

*Hab.* Iles Marquises.

64. *TEREBRA MODESTA*, Desh.

*T. testa elongato-subulata, nitida, micante griseo-fuscescente, pallide unifasciata, longitudinaliter plicata, transversim obsolete striata ; anfractibus planis, sutura crenulata junctis ; apertura minima, intus castanea, ovato-angusta, utraque extremitate attenuata, zonula alba intus bipartita ; columella acuta, fusco maculata, superne obliquissime uniplicata.*

Long. 22 mill., larg. 4.

*Hab.* L'embouchure de l'Indus.

Collection Cuming.

Malgré son analogie avec le *matheroniana*, le *caliginosa* et quelques autres espèces du même groupe celle-ci se distingue facilement, non-seulement par sa coloration, mais encore par les côtes nombreuses, droites et régulières, que portent les tours. Ses côtes sont peu proéminentes, parfaitement régulières ; elles disparaissent à la circonférence du dernier tour ; la coloration est d'un gris brunâtre, uniforme, si ce n'est à la suture, où elle devient plus blanchâtre.

65. *TEREBRA LEPIDA*, Hinds.

*Terebra lepida*, Hinds, *Thes. Conch.* p. 182. no. 92. pl. 45. f. 102.

*Hab.* Guinée.

66. *TEREBRA BOURGUIGNATI*, Desh.

*T. testa minima, elongato-turrita, angusta, atro-fuscescente, ad suturam zonula alba cincta, longitudinaliter costata, costis rectis, angulatis, simplicibus ; anfractibus convexiusculis, linea punctata vix impressa marginatis, ultimo brevi, attenuato, canali brevi, angusto terminato ; apertura minima, ovata, profunde fusca ; columella brevi, cylindræa, biplicata, extus angulo marginata.*

Long. 19 mill., larg. 4.

*Hab.* Les mers de la Chine.

Collection Cuming et la mienne.

67. *TEREBRA CROSSII*, Desh.

*T. testa elongato-turrita, angusta, apice acuminata, longitudinaliter plicata, nitida, cærulescente, zona alba maculis rubro-fuscis interrupta ad basin anfractuum ornata, venulis ramosis sanguineis in parte superiore anfractuum dispersis; anfractibus planulatis, linea vix impressa subæqualiter divisis, ultimo brevi, attenuato; columella alba, extus basi angulo acuto circumdata.*

Long. 23 mill., larg. 5.

*Hab.* L'océan de l'Inde.

Collection de M. Crosse.

Espèce remarquable par sa coloration d'un bleu peu foncé, interrompu à la base des tours par une large zone blanche interrompue par des taches d'un beau brun rougeâtre; de ces taches partent des lignes rameuses qui occupent tout la largeur des tours; ces linéoles sont d'un brun rouge foncé et ressemblent à de petites veines sanguinolentes. La surface est brillante, couverte de gros plis; une strie transverse à peine apparente divise les tours en deux parties presque égales.

68. *TEREBRA PHILIPPIANA*, Desh.

*T. testa minima, elongato-turrita, angusta, acuminata, zonula fusco-rubescens et zonula alba æqualiter bipartita; anfractibus vix convexis, longitudinaliter tenue plicatis, interstitiis lævigatis; ultimo anfractu basi lævigato et candido, attenuato; apertura minima, candida, ovato-attenuata, profunde lateque emarginata; columella conica, simplici, alba.*

Long. 8 mill., larg.  $2\frac{1}{2}$ .

*Hab.* Iles Marquises?

Collection Cuming.

Elle est l'une des plus petites espèces du genre; elle se distingue facilement par sa coloration, qui consiste en deux zones d'égale largeur, l'une blanche à la base des tours, l'autre brune qui montent en spirale de la base au sommet.

69. *TEREBRA PYGMÆA*, Hinds.

*Terebra pygmæa*, Hinds, Thes. Conch. p. 184. no. 103, pl. 45. f. 112.

*Hab.* Chine; détroit de Malacca.

70. *TEREBRA TENERA*, Hinds.

*Terebra tenera*, Hinds, Thes. Conch. p. 184. no. 104, pl. 45. f. 111.

*Hab.* Chine; détroit de Malacca.

(b.) *Ouverture dilatée à la base.*

1. *Tours lisses ou finement striés.*

71. *TEREBRA NIMBOSA*, Hinds.

*Terebra nimbosa*, Hinds, Thes. Conch. p. 159. no. 26, pl. 42. f. 21.

*Hab.* Nouvelle Hollande.



72. *TEREBRA CÆRULESCENS*, Lamk.

*Buccinum niveum*, Gmel. p. 3504. no. 154 (nec *niveum*, p. 3495).

*Buccinum edentulum*, Gmel. p. 3505. no. 162?

*Buccinum bifasciatum*, Dillw. Cat. t. ii. p. 651. no. 155 ; Kiener, Icon. des Coq. Viv. p. 17. no. 17, pl. 6 et 7. f. 12.

*Hab.* Nouvelle Hollande ; Iles de la Société, &c.

73. *TEREBRA JAMAICENSIS*, C. B. Adams.

*Terebra jamaicensis*, Lister, Conch. pl. 979. f. 37 ; C. B. Adams, Contr. to Conch. 1850, no. 4. p. 58.

*Buccinum strigatum*, var.  $\gamma$ , Gmel. p. 3501.

*T. testa elongato-acuta, griseo-fuscescente vel nigrescente ; anfractibus latis, contiguïs, sutura lineari junctis, fasciola albidula aliquantisper irregulariter punctata ad suturam notatis, tenue plicatis, plicis in medio anfractuum evanescentibus, undique sub lente minutissime punctulatis ; apertura angusta, superne alternata, basi dilatata, late emarginata ; columella obliqua, atro-fuscescente, callo albo-flavescente, angulo acuto extus separata. Colore variabili.*

Long. 60 mill., larg. 13.

*Hab.* La Jamaïque ; toutes les Antilles.

74. *TEREBRA STYLATA*, Hinds.

*Terebra stylata*, Hinds, Thes. Conch. p. 161. no. 30, pl. 44. f. 79.

*Hab.* Philippines ; Japon.

75. *TEREBRA LUCTUOSA*, Hinds.

*Terebra luctuosa*, Hinds, Thes. Conch. p. 181. no. 89, pl. 45. f. 121.

*Hab.* Golfe de Nicoya ; Porto Portrero ; côte ouest de l'Amérique.

76. *TEREBRA LAURINA*, Hinds.

*Terebra laurina*, Hinds, Thes. Conch. p. 161. no. 29, pl. 42. f. 27.

*Hab.* Côte occidentale de l'Afrique.

Si les échantillons que nous a communiqués M. Cuming, des trois espèces précédentes (*stylata*, *luctuosa*, *laurina*) sont bien identiques à ceux décrits par M. Hinds, il en résulterait qu'ils en diffèrent en rien d'essentiel du *T. jamaicensis* et devront lui être réunis ; mais avant de prendre une décision définitive à ce sujet il serait nécessaire d'examiner de nouveau les types eux-mêmes figurés et décrits par Hinds.

77. *TEREBRA CASTANEA*, Kiener.

*Terebra castanea*, Kiener, Icon. des Coq. Viv. p. 19. no. 14, pl. 7. f. 14.

*Hab.* Ile de France ; Océan Indien.

Cette espèce comme les précédentes a les plus grands rapports avec le *jamaicensis*.

78. *TEREBRA MICANS*, Hinds.*Terebra micans*, Hinds, Thes. Conch. p. 181. no. 91, pl. 45. f. 125.*Hab.* —?79. *TEREBRA ADANSONI*, Desh.*T. testa elongato-acuminata, nitida, albo-luteola, aliquantisper griseo vel fusco fasciata; anfractibus latis, contiguïs, sutura lineari vix separatis, tenuiter longitudinaliter semistriatis; ultimo anfractu magno, subventricoso; apertura elongato-acuta, superne attenuata, basi dilatata, profunde lateque emarginata; columella brevi, conoidea, apice acuminata, extus callo albo induta.*

Long. 39 mill., larg. 8.

*Hab.* Sénégal.

Collection Cuming et la mienne.

80. *TEREBRA INCONSTANS*, Hinds.*Terebra inconstans*, Hinds, Thes. Conch. p. 179. no. 85, pl. 44. f. 83.*Hab.* Iles Sandwich.2. *Plis continus d'un tour à l'autre.*81. *TEREBRA ANOMALA*.*Terebra anomala*, Gray, Proc. Zool. Soc. 1834, p. 62; Hinds. Thes. Conch. p. 180. no. 86, pl. 44. f. 97.*Hab.* Singapore.82. *TEREBRA STRIGILATA*, Lamk.*Buccinum strigilatum*, Linn. Syst. Nat. ed. 12. p. 1206; Hinds, Thes. Conch. p. 180. no. 88, pl. 45. f. 101, 102.*Hab.* Nouvelle Guinée; Macassar; Philippines.83. *TEREBRA CINEREA*, Born.*Buccinum cinereum*, Born, Mus. p. 267, pl. 10. f. 11, 12.*Hab.* Philippines.

En comparant au *cinerea* de Born la coquille figurée sous le même nom par M. Hinds nous remarquons des différences qui nous font soupçonner une erreur dans la détermination spécifique de ce dernier naturaliste.

Le *T. cinerea* de Basterot (Foss. de Bord. p. 52, pl. 3. f. 14) est une espèce très-distincte de celle-ci.

84. *TEREBRA NANA*, Desh.*T. testa minima, elongato-acuminata, subfusiformi, pallide flava, bifariam maculis pallidis fulvis ornata; anfractibus angustis, vix convexiusculis, primis costatis, ultimis simplicibus; aper-*

*tura minima, basi dilatata ; columella brevi, conica, extus angulo acuto angustissimo marginata.*

Long. 10 mill., larg.  $2\frac{1}{2}$ .

*Hab.* L'embouchure de l'Indus.

Collection Cuming.

D. *Coquille ayant l'ouverture oblongue, étroite, les tours nombreux, sillonnés, plissés ou treillisés (Myurella, Hinds).*

a. *Un sillon transverse partageant presque également la surface des tours.*

85. *TEREBRA DUPLICATA*, Lamk.

*Buccinum duplicatum*, Linn. Syst. Nat. ed. 12. p. 1206 ; Kiener, Icon. des Coq. Viv. p. 32. no. 27, pl. 12. f. 26.

*Hab.* Madagascar ; Océan Indien, &c.

Nous avons séparé comme espèce distincte (*T. kieneri*) la variété junior de M. Kiener.

86. *TEREBRA LAMARCKII*, Kiener.

*Terebra Lamarckii*, Kiener, Icon. des Coq. Viv. p. 30. no. 25, pl. 9. f. 19.

*Terebra duplicata*, var., Hinds, Thes. Conch. p. 155, pl. 41. f. 2.

*Hab.* Moluques.

M. Hinds n'a point accepté cette espèce ; elle nous paraît distincte après l'examen d'un grand nombre d'individus.

87. *TEREBRA DUSSUMIERI*, Kiener.

*Terebra dussumieri*, Kiener, Icon. des Coq. Viv. p. 31. no. 26, pl. 8. f. 16.

*Hab.* Chine.

88. *TEREBRA EVOLUTA*, Desh.

*T. testa elongato-turrita, apice acuto, fusco-fuliginosa ; anfractibus latis, rapide evolutis, ad suturam marginatis, depresso-canaliculatis, longitudinaliter costatis, costis albicantibus, interstitiis lævigatis ; margine suturali depresso, crenulato ; ultimo anfractu elongato, basi convexiusculo ; apertura ovato-oblonga, fusca, antice profunde lateque emarginata ; columella obliqua.*

Long. 50 mill., larg. 11.

*Hab.* Japon.

Collection Cuming.

Belle et remarquable espèce voisin du *Dussumieri*, mais bien distincte par le canal profond qui sépare le bourrelet de la suture. Sur un fond d'un brun enfoncé se détachent des côtes droites et blanchâtres.

89. *TEREBRA ARMILLATA*, Hinds.

*Terebra armillata*, Hinds, Thes. Conch. p. 173. no. 66, pl. 43.  
f. 49.

*Hab.* Panama ; Californie ; baie de la Madeleine.

90. *TEREBRA BERNARDII*, Desh.

*T. testa elongato-subulata, acuminata, grisea, albo superne unifasciata, in ultimo anfractu fasciola alba, mediana ; anfractibus latis, convexiusculis, longitudinaliter plicatis, plicis convexis, regularibus, transversim sulco inæqualiter bipartitis, ultimo anfractu ad basin attenuato ; apertura intus castanea, labro intus fasciola alba diviso ; columella labro brevior, flavicante, angusta, extus basi angulo carinato circumscripta.*

Long. 58 mill., larg. 14.

*Hab.* Les côtes orientales de l'Australie.

Ma Collection, communiquée par M. Bernardi.

91. *TEREBRA JUKESEI*, Desh.

*T. testa elongato-subulata, turrita, omnino griseo-plumbea, ultimo anfractu fasciola alba in medio cincto ; anfractibus latiusculis, sulco profundo bipartitis, longitudinaliter tenue et regulariter plicatis ; margine suturali angusto, convexo, plicis apice albis notato ; apertura minima, angusta, obliqua, intus castanea, basi late emarginata ; columella cylindræco-conica, extus angulo acuto circumdata.*

Long. 33 mill., larg. 8.

*Hab.* Le Port Essington.

Collection Cuming.

92. *TEREBRA ADDITA*, Desh.

*T. testa elongato-turrita, subfusiformi, apice acuminata, griseo-fuscescente, transversim albo-fasciata ; anfractibus latis, longitudinaliter plicato-costulatis, linea impressa inæqualiter transversim partitis, ad suturam subcrenulatis, ultimo anfractu cylindræco, antice attenuato, costulis ad basin evanescentibus ; apertura elongato-subquadrata, intus castanea ; labro fasciolato, albo bipartito ; columella elongato-cylindræcea, extus angulo acuto marginata, basi profunde emarginata.*

Long. 33 mill., larg. 7.

*Hab.* La Terre de Van Diemen.

Collection Cuming.

93. *TEREBRA PlicateLLA*, Desh.

*T. testa elongato-angusta, subulata, acuta, omnino pallide griseo-flavidula ; anfractibus numerosis, angustis, longitrorsum regulariter costulato-plicatis, punctatis, interstitialibus unica serie notatis, ultimo anfractu brevi coarctato, basi lævigato ; apertura parvula, intus flavida, utraque extremitate attenuata, an-*



*tice canali brevi et angusto terminata, margine sinistro proeminente.*

Long. 37 mill., larg. 6.

*Hab.* La Terre de Van Diemen.

Collection Cuming.

94. *TEREBRA LONGISCATA*, Desh.

*T. testa elongato-angusta, subulata, livide fusco-grisea, longitudinaliter costulata, transversim obsolete striata; anfractibus numerosis, sulco impresso subæqualiter divisus, planis, subcontinuis, ultimo brevi, apice attenuato; apertura intus castanea, minima, ovato-angusta, utraque extremitate attenuata.*

Long. 29 mill., larg. 9.

*Hab.* Les Iles Philippines.

Collection Cuming.

95. *TEREBRA SPECTABILIS*, Hinds.

*Terebra spectabilis*, Hinds, Thes. Conch. p. 157. no. 17, pl. 44. f. 88, 89.

*Hab.* Guinée; Sumatra.

96. *TEREBRA USTULATA*, Desh.

*T. testa elongato-conica, apice acuminata, basi lata, breviuscula, castanea, ultimo anfractu superne castaneo nitentiore picto; anfractibus numerosis, angustis, subæqualiter sulco bipartitis; area inferiore paulo angustiore, multo depressiore, altera longitudinaliter plicata; plicis regularibus crassiusculis; interstitiis simplicibus, in margine suturali minus proeminentibus; apertura brevi, angusta, fusca, canali brevissimo terminata.*

Var.  $\beta$ . *Testa albido-fuscescente, ultimo anfractu basi fusco.*

Long. 35 mill., larg. 10.

*Hab.* La Terre de Van Diemen.

Collection Cuming.

97. *TEREBRA KIENERI*, Desh.

*Terebra duplicata*, var. junior, Kien. Spec. Gen. pl. 12. f. 26 A.

*T. testa elongato-turrita, pallide castanea, tenuissime longitudinaliter plicata; anfractibus latis, convexiusculis, sulco impresso inæqualiter bipartitis; margine suturali depressiusculo, ultimo anfractu brevi, basi obtuso; apertura minima, ovata, basi anguste emarginata.*

Long. 22 mill., larg. 6.

*Hab.* La Terre de Van Diemen.

Collection Cuming et celle du Mus. de Paris.

b. *Bourrelet de la suture étroit.*

98. *TEREBRA GEMMULATA*, Kiener.

*Terebra gemmulata*, Kiener, Icon. des Coq. Viv. p. 15. no. 11, pl. 5. f. 11.

*Hab.* — ?

99. *TEREBRA DISLOCATA*, De Kay.

*Terebra dislocata*, De Kay, Zool. of New York, pt. 5. p. 152, pl. 7. f. 158.

*Cerithium dislocatum*, Say, Journ. Ac. Nat. Sc. Philad. t. ii. p. 235.

*Terebra petiti*, Kiener, Icon. des Coq. Viv. p. 37, pl. 13. f. 32.

*Hab.* Maryland.

Le *Terebra petiti* n'appartient pas au *rudis* de Gray, ainsi que l'affirme M. Hinds, mais bien au *dislocata* de Say, ainsi que nous avons pu nous en assurer autrefois dans la collection de M. Petit. La description et la figure de M. Kiener, et la localité qu'il indique ne laissent aucun doute à ce sujet. M. Hinds n'a point connu l'espèce.

100. *TEREBRA SUBNODOSA*, Carpenter.

*Terebra subnodosa*, Carpenter, Cat. Mazatl. Moll. p. 386. no. 452.

*Hab.* Mazatlan.

101. *TEREBRA HINDSI*, Carpenter.

*Terebra hindsii*, Carpenter, Cat. Mazatl. Moll. p. 385. no. 451.

*Hab.* Mazatlan.

102. *TEREBRA RUFOCINEREA*, Carpenter.

*Terebra rufocinerea*, Carpenter, Cat. Mazatl. Moll. p. 386. no. 453.

*Hab.* Mazatlan.

103. *TEREBRA ALBOCINCTA*, Carpenter.

*Terebra albocincta*, Carpenter, Cat. Mazatl. Moll. p. 384. no. 450.

*Hab.* Mazatlan.

104. *TEREBRA CHILENSIS*, Desh.

*T. testa elongato-subulata, castaneo-fusca, longitudinaliter tenue plicata; anfractibus numerosis, convexiusculis, sulco lato impresso inæqualiter bipartitis; sutura marginata; margine angusto crenulato; ultimo anfractu elongato, attenuato, fasciola albidula, transversim bipartito; apertura ovato-angusta, utrinque attenuata; columella angusta, cylindracea, apice attenuata, canali angusto-emarginata; extus contorta.*

Long. 42 mill., larg. 8.

*Hab.* Les mers du Chili.

Ma Collection.

105. *TEREBRA BICINCTA*, Hinds.

*Terebra bicincta*, Hinds, Thes. Conch. p. 175. no. 71, pl. 44. f. 72.

*Hab.* — ?

106. *TEREBRA NODULARIS*, Desh.

*T. testa elongato-angusta, acuminata, albida, luteo pallidissime tincta; anfractibus numerosis, circiter septemdecim, angustis, involutis, late bimarginatis, crenato-nodosus, plicatis, superne*

*transversim bistriatis ; margine suturali crassiore, altero angustiore, paulo depressiore, æqualiter noduloso ; ultimo anfractu brevissimo, obtuso, transversim basi striato ; apertura minima, subquadrangulari, canali brevi et angusto terminata ; columella cylindræa, biplicata.*

Long. 35 mill., larg. 6.

*Hab.* Les Iles Sandwich.

Collection Cuming et la mienne.

Coquille remarquable par le double bourrelet noueux qui accompagne la suture ; le premier est très-épais, le second est un peu moins saillant et un peu plus étroit ; ils envahissent la presque totalité de la surface ; le peu d'espace qui reste est occupé par deux, quelquefois trois stries transverses.

107. *TEREBRA VARIEGATA*, Gray.

*Terebra variegata*, Gray, Proc. Zool. Soc. 1834, p. 61 ; Hinds, Thes. Conch. p. 173. no. 64, pl. 43. f. 53.

*Terebra africana*, Gray dans Griff. An. Kingd. pl. 23. f. 5.

*Hab.* Golfe de Californie.

108. *TEREBRA GEMINATA*, Desh.

*T. testa elongato-turrita, subulata, fusco alboque transversim fasciata ; anfractibus planulatis, sulco lato profundo bipartitis, utroque latere serie granularum geminatis, superne costellatis ; apertura ovato-oblonga, angusta, intus castanea ; columella cylindræa, extus angulo albo lato acuto circumdata.*

Long. 30 mill., larg. 7.

*Hab.* Cap Natal.

Collection Cuming.

109. *TEREBRA MARGINATA*, Desh.

*T. testa conica, turrita, acuminata, griseo-plumbea, basi anfractuum albo marginata, fusco irregulariter maculata ; anfractibus latis, sulco divis, longitudinaliter costellatis, transversim tenue striatis ; margine suturali crasso, convexo, albo, nodulis crassis acutis asperato ; ultimo anfractu basi obtuso, transversim sulcato, zonula alba notato ; apertura elongato-angusta, intus castanea, labro linea alba bipartito ; columella contorta, subplicata.*

Long. 34 mill., larg. 8.

*Hab.* L'embouchure de la Gambie.

Collection Cuming.

110. *TEREBRA BREVICULA*, Desh.

*T. testa elongato-turrita, griseo-fusca, longitudinaliter plicata, plicis latis, planis, undulatis ; anfractibus planis, latis, albo marginatis, margine convexiusculo, fusco irregulariter punctato, ultimo anfractu basi dilatato, fasciola alba in medio bipartito, flammulis castaneis numerosis sæpius ornato ; apertura elongato-subquadrata,*

*intus castanea; columella cylindracea, sub-uniplicata, extus angulo acuto marginata.*

Long. 37 mill., larg. 8.

*Hab.* La Terre de Van Diemen.

Collection Cuming.

111. *TEREBRA BIFRONS*, Hinds.

*Terebra bifrons*, Hinds, Thes. Conch. p. 174, pl. 43. f. 57.

*Hab.* Japon.

112. *TEREBRA BRUGUIERI*, Desh.

*T. testa elongata, turrita, angusta, apice acuminato, candida, rubro-purpurascens, pallido maculata et strigata; ultimo anfractu ad basin flavo-rubente; anfractibus angustis numerosis, sulco vix impresso divisus, supra marginem suturalem transversim striatis; costulis minutis, longitudinalibus, numerosis, regularibus, decussatis; ultimo anfractu brevi, retuso; apertura parva, ovata, utrinque attenuata, intus rosea; columella brevi, cylindracea, uniplicata, angulo minuto extus vix distincta.*

Long. 42 mill., larg. 9.

*Terebra hindsii*, Desh., non Carpenter, Journ. de Conch. 1857.

*Hab.* La Chine.

Collection Cuming.

113. *TEREBRA AMÆNA*, Desh.

*T. testa elongato-turrita, angusta, apice acuminato, flava, ad suturas albo rubroque alternatim maculata; anfractibus numerosis, angustis, planulatis, linea punctato-impressa inæqualiter divisus, longitudinaliter tenue regulariterque lirato-costulatis, interstitiis transversim tenue striatis; ultimo anfractu brevi, basi depressiusculo; apertura ovato-angusta, intus rufescente; columella cylindracea, subplicata, basi late profundeque emarginata, angulo acuto extus circumscripta.*

Long. 24 mill., larg. 6.

*Hab.* Les mers de la Chine.

Collection Cuming.

114. *TEREBRA PULCHELLA*, Desh.

*T. testa elongato-turrita, acuminata, flavida, basi albo cincta; anfractibus planulatis, longitudinaliter arcuatim tenue plicatis, sulco impresso divisus, sulco utroque latere crenato, margine prominulo, convexo, regulariter plicato; apertura intus flava, elongato-angusta, canali brevi terminata; columella cylindracea, parum obliqua, alba, angulo acuto perobliquo extus circumdata.*

Long. 40 mill., larg. 8.

*Hab.* Les mers de la Chine.

Collection Cuming et celle de M. Crosse.



115. *TEREBRA CRENIFERA*, Desh.

*T. testa elongato-subulata, angusta, albo-flavida; anfractibus numerosis, longitudinaliter tenue costellatis, sulco subimpresso divisis, ad suturam regulariter crenulatis, transversim tenue striatis, crenulis albis, punctulis rubris interjectis; ultimo anfractu brevi, canali elongato terminato; apertura elongato-angusta, flavida; columella cylindracea, apice contorta.*

Long. 30 mill., larg. 6.

*Hab.* Les mers de la Chine.

Collection Cuming.

116. *TEREBRA BLANDA*, Desh.

*T. testa elongato-turrita, acuminata, obsolete longitudinaliter plicata, alba, ad suturam fusco punctata, flammulis pallidioribus ornata; anfractibus numerosis, angustis, sulco impresso inæqualiter bipartitis, marginatis, ultimo breviusculo, attenuato; apertura elongato-angusta, utrinque attenuata, alba, basi anguste emarginata; columella elongata, apice acuminata.*

Long. 30 mill., larg. 8.

*Hab.* Les mers du Japon.

Collection Cuming.

117. *TEREBRA NEBULOSA*, Sow.

*Terebra nebulosa*, Sow. Tank. Cat. App. p. 25; Hinds, Thes. Conch. p. 162. no. 33, pl. 43. f. 51.

*Hab.* — ?

118. *TEREBRA PERTUSA*, Kiener.

*Buccinum pertusum*, Born, Mus. p. 267, pl. 10. f. 13.

*Buccinum duplicatum*, var.  $\beta$ , Gmel. p. 3501.

*Terebra pertusa*, Kiener, Icon. des Coq. Viv. p. 34. no. 20, pl. 11. f. 24, exclus. variat.

*Hab.* — ?

M. Kiener confond sous ce nom plusieurs espèces; il faut en exclure toutes les variétés. La première (24 a) nous est inconnue; la seconde (24 b) représente le *Terebra affinis*, Gray; la troisième (24 c) est notre *Terebra approximata*.

119. *TEREBRA ALVEOLATA*, Hinds.

*Terebra alveolata*, Hinds, Thes. Conch. p. 162. no. 34. pl. 45. f. 120.

*Hab.* Détroit de Malacca.

120. *TEREBRA UNDULATA*, Gray.

*Terebra undulata*, Gray, Proc. Zool. Soc. 1834, p. 60; Hinds, Thes. Conch. p. 172. pl. 43. f. 55.

*Hab.* Nouvelle Guinée; détroit de Malacca.

121. *TEREBRA COLUMELLARIS*, Hinds.

*Terebra columellaris*, Hinds, Thes. Conch. p. 172. no. 61, pl. 44.  
f. 77.  
*Hab.* — ?

122. *TEREBRA FLAVESCENS*, Desh.

*T. testa elongato-turrita, angusta, apice acuminato, omnino flava; anfractibus latiusculis, convexiusculis, subinvolutis, sulco impresso marginatis, sutura profunde separatis, longitudinaliter et arcuatim multicostatis, primis transversim striatis, alteris obsolete striatis; margine suturali crasso, regulariter crenato; ultimo anfractu basi convexo, canali brevi profunde emarginato terminato; apertura angusta, elongato-quadrata; columella cylindracea, obsolete bisplicata.*

Long. 45 mill., larg. 9.

*Hab.* Les Iles Sandwich.

Collection Cuming.

123. *TEREBRA AFFINIS*, Gray.

*Terebra affinis*, Gray, Proc. Zool. Soc. 1834, p. 60.

*Terebra striata*, Quoy & Gaim. (non Basterot) Voy. de l'Astr. t. ii.  
p. 468, pl. 36. f. 23, 24.

*Terebra pertusa*, var. C, Kiener, Icon. des Coq. Viv. pl. 11. f. 24 C.

*Hab.* Madagascar; Océan Indien, &c.

124. *TEREBRA CERITHINA*, Lamk.

*Terebra cerithina*, Kiener, Icon. des Coq. Viv. p. 33. no. 25, pl. 11.  
f. 25.

*Buccinum aciculatum*, Gmel. p. 3503. no. 145 ?

*Hab.* Philippines; Océan Austral.

125. *TEREBRA APPROXIMATA*, Desh.

*T. testa elongato-acuminata, turrita, angusta, longitudinaliter costata, costulis apice albis interstitiis flavicantibus; anfractibus numerosis planis, linea vix impressa, inaequaliter bipartitis; interstitiis costularum densissime transversim striatis; ultimo anfractu cylindraceo, basi depressiusculo, costulis evanescentibus; apertura elongato-subquadrata, intus albo-flavicante; columella arcuata, cylindracea, basi canaliculata, late profundeque emarginata.*

Var. *Testa paulo angustiore, flavo-ferruginea.*

Long. 42 mill., larg. 8.

*Terebra pertusa*, var. c, Kiener, Icon. des Coq. Viv. pl. 11. f. 24 C.

*Hab.* — ?

Ma Collection.

126. *TEREBRA SWAINSONI*, Desh.

*T. testa elongato-turrita, solida, angusta, apice acuto, omnino colore mali armeniaci; anfractibus viginti, angustis, longitudinaliter*

*costatis, convexiusculis, primis transversim striatis, alteris lævigatis, sulco impresso, inæqualiter bipartitis; costis numerosis, acutis, regularibus, rectis; ultimo anfractu brevi, basi convexo; apertura minima, candidula, ovato-angusta, utrinque attenuata, canali brevi, angusto terminata; columella obliqua, uniplicata.*

Long. 30 mill., larg. 5.

*Hab.* Les Iles Sandwich.

Collection Cuming.

127. *TEREBRA SUBANGULATA*, Desh.

*T. testa elongato-subulata, flavida, longitudinaliter costata, transversim striata; anfractibus convexiusculis, inferne subangulatis, sulco vix impresso bipartitis, costulis latis, obtusis; ultimo anfractu elongato, superne attenuato, canali brevi, lato, terminato; apertura flava, elongato-angusta, subquadrata; columella angusta, apice acuta, basi cylindracea.*

Long. 34 mill., larg. 7.

*Hab.* — ?

Ma Collection.

128. *TEREBRA COPULA*, Hinds.

*Terebra copula*, Hinds, Thes. Conch. p. 157. no. 19, pl. 44. f. 76.

*Hab.* Guinée.

129. *TEREBRA UNDATELLA*, Desh.

*Terebra cancellata*, Hinds (nec Quoy), Thes. Conch. p. 178. no. 80, pl. 44. f. 80.

*Hab.* — ?

Ce *Terebra cancellata* de Hinds constitue une espèce bien distincte de celle de MM. Quoy et Gaimard. Il suffit pour s'en convaincre de rapprocher les figures publiées par ces deux auteurs.

130. *TEREBRA BERMONTI*, Lorois.

*Terebra bermonti*, Lorois, Journ. de Conch. 1857, p. 389, pl. 12. f. 2.

*Hab.* Taïti.

131. *TEREBRA ROSEATA*, A. Adams et Reeve.

*Terebra roseata*, A. Adams et Reeve, Voy. du Samarang, p. 30, pl. 10. f. 24.

*Hab.* Iles Sooloo.

132. *TEREBRA BADIA*, Desh.

*Terebra castanea*, Hinds (nec Kiener), Thes. Conch. p. 161. no. 31, pl. 43. f. 59.

*Hab.* Guinée.

Nous avons dû changer le nom de l'espèce de M. Hinds parce qu'elle est très-distincte de celle de même nom publiée par M. Kiener;

cette dernière est lisse, l'autre est fortement plissée ; elle a les tours simples, la seconde les a partagés par un sillon transverse, &c.

133. *TEREBRA ALBICOSTA*, A. Adams et Reeve.

*Terebra albicosta*, A. Adams et Reeve, Voy. du Samarang, p. 30, pl. 10. f. 21.

*Hab.* Mers de la Chine.

134. *TEREBRA PULCHRA*, Hinds.

*Terebra pulchra*, Hinds, Thes. Conch. p. 178. no. 81, pl. 45. f. 129.

*Hab.* Iles Marquises.

135. *TEREBRA TEXTILIS*, Hinds.

*Terebra textilis*, Hinds, Thes. Conch. p. 177. no. 79, pl. 44. f. 73.

*Hab.* Baie de Manille ; détroit de Macassar.

136. *TEREBRA FLAVA*, Gray.

*Terebra flava*, Gray, Proc. Zool. Soc. 1844, p. 60 ; Hinds, Thes. Conch. p. 177. no. 77, pl. 44. f. 75.

*Hab.* — ?

137. *TEREBRA EXIGUA*, Desh.

*T. testa minima, elongato-angusta, castaneo-livida ; costellis longitudinalibus sulcisque transversis clathratis ; anfractibus numerosis, angustis, sulco impresso transversali inæqualiter bipartitis ; margine suturali oblique crenulato, transversim tenue striato ; apertura elongato-angusta, intus castaneo-rubescens ; columella cylindracea, brevi, extus angulo acutissimo angusto basi circumdata.*

Long. 19 mill., larg.  $3\frac{1}{2}$ .

*Hab.* La côte orientale d'Australie.

Collection Cuming.

138. *TEREBRA POLYGYRATA*, Desh.

*T. testa minima, elongato-angusta, subulata, pallide rufescente, fascia alba ad suturam ornata, longitudinaliter plicata, transversim minutissime striata, striis profundis, regularibus ; anfractibus numerosis, angustis, convexiusculis, ultimo basi obtuso, canali brevi, contorto terminato ; apertura minima, angusta, subquadrangulari, superne anguste et profunde emarginata ; columella cylindracea, contorta.*

Long. 13 mill., larg. 3.

*Hab.* Les Iles Philippines.

Collection Cuming.

Petite espèce remarquable par son élégance. Les tours nombreux et étroits sont partagés en deux zones inégales par un sillon légèrement déprimé : elle se sépare plus facilement encore par la différence de coloration ; car la zone marginale est d'un beau blanc, tandis que le reste est d'un fauve pâle. La surface des tours est ornée d'un



grand nombre de petites côtes légèrement courbées, dans l'intervalle desquelles existent un grand nombre de fines stries, transverses, régulières, que l'on voit aussi bien sur le bourrelet marginal que sur le reste de la surface.

139. *TEREBRA RADULA*, Hinds.

*Terebra radula*, Hinds, Thes. Conch. p. 174. no. 68, pl. 44. f. 95.

*Hab.* Porto Portrero ; côte ouest de l'Amérique.

140. *TEREBRA ASPERA*, Hinds.

*Terebra aspera*, Hinds, Thes. Conch. p. 174. no. 67, pl. 43. f. 44.

*Hab.* Panama ; Monte Christi ; S<sup>ta</sup> Elena.

141. *TEREBRA PETIVERIANA*, Desh.

*Terebra petiveriana*, Petiver, Gazoph. pl. 75. f. 5.

*T. testa elongato-turrita, acuminata, fusco-nigrescente, fasciola albicante basi notata ; anfractibus planiusculis, sulco profundo impresso divisus, longitudinaliter costellatis, transversim striato-sulcatis, profunde decussatis, subgranulosus ; margine suturali regulariter crenato-plicato ; apertura intus nigrescente, ovato-oblonga, antice angusta, canali brevi terminata ; columella atrata, contorta, extus angulo prominente acutissimo circumdata.*

Long. 42 mill., larg. 10.

*Hab.* Panama.

Collection Cuming.

Cette intéressante et belle espèce a été très bien figurée autrefois dans le remarquable ouvrage de Petiver.

142. *TEREBRA GLAUCA*, Hinds.

*Terebra glauca*, Hinds, Thes. Conch. p. 175. no. 70, pl. 44. f. 85.

*Hab.* — ?

143. *TEREBRA RUDIS*, Gray.

*Terebra rudis*, Gray, Proc. Zool. Soc. 1834, p. 60 ; Hinds, Thes. Conch. p. 165. no. 43, pl. 43. f. 60 (exclusa *T. petiti*, Kiener).

*Hab.* — ?

144. *TEREBRA PEASII*, Desh.

*T. testa elongato-turrita, crassa, solida, apice acuta, albo flavidoque pallido alternatim picta ; anfractibus circiter sexdecim, latis, longitudinaliter tenue plicatis, striis transversis punctulatis, decussatis, sulco impresso, profundo, inæqualiter divisus ; margine suturali regulariter plicato, plicis albis ; apertura alba, elongato-angusta, subquadrata, canali brevi, angusto, profundo terminata ; columella conica, uniplicata, angulo acuto extus basi marginata.*

Long. 45 mill., larg. 9.

*Hab.* Les Iles Sandwich.

Collection Cuming.

Les stries transverses se voient sur toute la surface, même entre les plis du bourrelet marginal.

145. *TEREBRA TUBEROSA*, Hinds.*Terebra tuberosa*, Hinds, Thes. Conch. p. 183. no. 97, pl. 45. f. 99.*Hab.* — ?

A la juger par la figure, cette coquille semblerait un Cérîte dont l'ouverture aurait été mutilée ou serait restée imparfaite.

146. *TEREBRA VARICOSA*, Hinds.*Terebra varicosa*, Hinds, Thes. Conch. p. 163. no. 37, figuré dans le texte.*Hab.* Golfe de Papagayo, côte ouest de l'Amérique.147. *TEREBRA TUBERCULOSA*, Hinds.*Terebra tuberculosa*, Hinds, Thes. Conch. p. 175. no. 73, pl. 43. f. 48.*Hab.* Panama ; Golfe de Papagayo ; San Blas.148. *TEREBRA INTERTINCTA*, Hinds.*Terebra intertincta*, Hinds, Thes. Conch. p. 173. no. 65, pl. 44. f. 81.*Hab.* Gambie.149. *TEREBRA PLICATA*, Gray.*Terebra plicata*, Gray, Proc. Zool. Soc. 1834, p. 61 ; Hinds, Thes. Conch. p. 165. no. 44, pl. 43. f. 61.*Hab.* Guayaquil.150. *TEREBRA SPECILLATA*, Hinds.*Terebra specillata*, Hinds, Thes. Conch. p. 163. no. 35, pl. 44. f. 96, et pl. 45. f. 116.*Hab.* San Blas, Mexico.

Lorsque l'on rapproche les deux figures qui, dans l'ouvrage de M. Hinds, doivent représenter la même espèce, on est étonné des différences que l'on y remarque ; elles se montrent non-seulement dans la forme générale et la coloration, mais encore dans les caractères plus essentiels de l'ouverture et de la columelle. Il est probable que deux espèces sont ici confondues.

151. *TEREBRA LARVIFORMIS*, Hinds.*Terebra larvæformis*, Hinds, Thes. Conch. p. 176. no. 73, pl. 43. f. 46, 47.*Hab.* Santa Elena, Monte Christi, côte ouest de l'Amérique.

Nous avons à présenter sur cette espèce la même observation que sur la précédente. Les deux figures citées par l'auteur semblent représenter deux espèces distinctes ; l'une ayant l'ouverture plus courte, le bord droit, plus long que la columelle, &c.

152. *TEREBRA SOULEYETI*, Desh.*T. testa elongato-acuminata, longitudinaliter dense plicata, trans-*

*versim tenuiter striata, griseo-rufescente; anfractibus numerosis, angustis, vix convexiusculis, sulco impresso, profundeque punctato inæqualiter bipartitis; margine suturali angusto, crenato, plicato; ultimo anfractu brevi, basi obtuso; apertura minima, brevi, angusta; columella cylindracea, contorta, canali brevi terminata.*

Long. 49 mill., larg. 8.

*Hab.* Golfe de Mexique.

Ma Collection.

Le *Terebra larviformis* est l'espèce qui se rapproche le plus de celle-ci; elle en est différente par plusieurs caractères qui nous semblent suffisamment exprimée aussi bien dans la phrase caractéristique de M. Hinds que dans la nôtre. Les tours sont nombreux, étroits, à peine convexes; nous en comptons 24; ils sont chargés de petites côtes un peu obliques, rapprochées, un peu onduleuses sur le dernier tour, vers la base duquel elles disparaissent pour être remplacées par de fines stries transverses: ces stries se continuent sur le reste de la surface dans les interstices des côtes seulement. Le bourrelet marginal est étroit; mais il est nettement séparé par un sillon assez profond dans lequel s'enfonce une ponctuation plus profonde encore. Dans l'intervalle de chaque côte, des plis formant crenelure sur la suture terminent les côtes longitudinales.

153. *TEREBRA DIFFICILIS*, Desh.

*T. testa elongato-turrita, albo-flavicante, longitudinaliter densissime costellata; anfractibus numerosis, angustis, sulco impresso inæqualiter bipartitis, transversim superne substriatis; ultimo anfractu brevi, basi obtuso; apertura minima, elongato-angusta; columella cylindracea, contorta, subplicata, basi profunde emarginata.*

Long. 33 mill., larg. 8.

*Hab.* — ?

Ma Collection.

154. *TEREBRA CÆLATA*, A. Adams et Reeve.

*Terebra cælata*, A. Adams et Reeve, Voy. du Samarang, p. 30. no. 3, pl. 10. f. 22.

*Hab.* Philippines.

155. *TEREBRA TORQUATA*, A. Adams et Reeve.

*Terebra torquata*, A. Adams et Reeve, Voy. du Samar. p. 30. no. 6, pl. 10. f. 13.

*Hab.* Mers de la Chine.

156. *TEREBRA ELATA*, Hinds.

*Terebra elata*, Hinds, Thes. Conch. p. 177. no. 78, pl. 44. f. 68, 69.

*Hab.* Baie de Montijo.

157. *TEREBRA CANCELLATA*, Quoy et Gaimard.

*Terebra cancellata*, Quoy et Gaim. Voy. de l'Astr. t. ii. p. 471, pl. 36. f. 27, 28.

Cette espèce est celle à laquelle le nom de *cancellata* doit rester. La coquille nommée *cancellata* par M. Hinds est très-distincte ; nous lui avons donné le nom de *T. undatella*.

158. *TEREBRA CINCTELLA*, Desh.

*T. testa elongato-angusta, subulata, longitudinaliter costellata, griseo-fusca, livida, nitida ; anfractibus convexiusculis, sulco lato inæqualiter bipartitis, transversim striatis, striis quatuor vel quinque impressis ; ultimo anfractu brevi, fasciola pallida cincto ; apertura minima, ovato-angusta, extremitatibus attenuata, intus fusca ; columella brevi, cylindracea, basi canali brevi terminata.*

Long. 29 mill., larg. 6.

*Hab.* L'embouchure de l'Indus.

Collection Cuming.

159. *TEREBRA AREOLATA*, A. Adams et Reeve.

*Terebra areolata*, A. Adams et Reeve, Voy. du Samarang, p. 30. no. 4, pl. 10. f. 23.

*Hab.* Mers de la Chine.

160. *TEREBRA PLUMBEA*, Quoy et Gaim.

*Terebra plumbea*, Quoy et Gaim. Voy. de l'Astrol. t. ii. p. 470, pl. 36. f. 29, 30.

*Hab.* Iles Moluques.

A juger d'après les figures il y aurait trois espèces réunies sous ce nom—celle de M. Quoy, qui reste le type spécifique, celle de M. Kiener, et celle de M. Hinds. De deux choses, l'une ou les espèces sont fidèlement représentées, et alors elles diffèrent entre elles, ou les figures sont mauvaises et les coquilles reproduites ont besoin d'une nouvelle étude comparative.

161. *TEREBRA VIOLASCENS*, Hinds.

*Terebra violascens*, Hinds, Thes. Conch. p. 177. no. 76, pl. 44. f. 98.

*Hab.* Nouvelle Guinée ; Philippines.

162. *TEREBRA PICTA*, Hinds.

*Terebra picta*, Hinds, Thes. Conch. p. 176. no. 75, pl. 45. f. 105.

*Hab.* Philippines.

163. *TEREBRA DECUSSATA*, Phil.

*Terebra decussata*, Philippi, Zeits. für Malak. 1851, p. 124. no. 48.

*Hab.* — ?



164. *TEREBRA BELCHERI*, Phil.*Terebra belcheri*, Philippi, Zeits. für Malak. 1851, p. 123. no. 47.*Hab.* — ? (Du Voyage du *Belcher*.)165. *TEREBRA FRIGATA*, Hinds.*Terebra gracilis*, Gray, 1834 (nec Lea, 1833), Proc. Zool. Soc. p. 61 ; Hinds, Thes. Conch. p. 163. no. 38, pl. 44. f. 71.*Hab.* Afrique (*Gray*) ; Iles Galapagos (*Cuming*).166. *TEREBRA CONSPERSA*, Hinds.*Terebra conspersa*, Hinds, Thes. Conch. p. 163. no. 36, pl. 44. f. 74.*Hab.* Ile Samao, Philippines.167. *TEREBRA RUSTICA*, Hinds.*Terebra rustica*, Hinds, Thes. Conch. p. 183. no. 98, pl. 45. f. 113.*Hab.* — ?168. *TEREBRA SUBDIVISA*, Phil.*Terebra subdivisa*, Phil. Zeits. für Malak. 1851, p. 96. no. 46.*Hab.* — ?169. *TEREBRA NASSOIDES*, Hinds.*Terebra nassoides*, Hinds, Thes. Conch. p. 182. no. 95, pl. 45. f. 115.*Hab.* — .170. *TEREBRA FICTILIS*, Hinds.*Terebra fictilis*, Hinds, Thes. Conch. p. 183. no. 96, pl. 45. f. 109, 110.*Hab.* Australie.171. *TEREBRA TRISTIS*, Desh.*T. testa elongato-turrita, conoidea, albo-grisea, longitudinaliter fusco flammulata ; costulis crassis, regularibus, in ultimo anfractu evanescentibus ornata ; anfractibus convexiusculis, ultimo basi obtuso, canali lato, brevi, contorto, terminato ; apertura ovato-angusta, utrinque attenuata ; columella brevi, cylindracea, contorta.*

Long. 19 mill., larg. 9.

*Hab.* Les mers du Japon.Collection *Cuming*.

Petite coquille assez singulière qui devra se placer sur la limite du genre, comme un intermédiaire avec les *Buccins* : elle est turriculée, mais assez large à la base ; ses tours assez larges sont convexes ; ils portent de grosses côtes longitudinales un peu obliques, larges, obtuses et peu saillantes : il n'existe aucune trace de bourrelet marginal, et l'on n'y trouve aucune strie transverse. Sur un fond d'un blanc grisâtre se dessinent des flammules inégales, d'un brun fauve, interrompues à la circonférence du dernier tour par une large zone blanch-

âtre, au dessus de laquelle est nettement circonscrite une autre zone également large, d'un brun livide, qui occupe toute la base de ce dernier tour.

## DEUXIÈME DIVISION (*Terebra*, A. Adams).

### 172. *TEREBRA ROBUSTA*, Hinds.

*Terebra robusta*, Hinds, Thes. Conch. p. 155. no. 5, pl. 42. f. 35.

*Hab.* Panama ; Golfe de Nicoya ; Golfe de Papayo ; San Blas.

### 173. *TEREBRA OCLATA*, Lamk.

*Terebra oculata*, Kiener, Icon. des Coq. Viv. p. 11. no. 7, pl. 4. f. 7.

*Hab.* Moluques ; Iles de la Société, Océan Pacifique.

### 174. *TEREBRA ORNATA*.

*Terebra ornata*, Gray, Proc. Zool. Soc. 1834, p. 62 ; Reeve, Conch. Syst. t. ii. p. 245, pl. 274. f. 1.

*Hab.* Galapagos.

### 175. *TEREBRA FORMOSA*, Desh.

*T. testa turrita, conico-subulata, solida, alba, maculis rufis quadratis inæqualiter biseriatim ornata ; anfractibus planulatis, indivisis, in margine crenulatis, biseriatim granulosis, crenulis granulisque in ultimis anfractibus evanidis, ultimo brevi triseriatim maculato ; apertura brevi, angusta, superne canali lato, elongato, contorto terminata ; columella brevi, crassa, cylindræa.*

Long. 72 mill., larg. 13.

*Hab.* Panama.

Collection Cuming.

### 176. *TEREBRA SUBULATA*, Lamk.

*Buccinum subulatum*, Linn. Syst. Nat. ed. 12. p. 1205 ; Kiener, Icon. des Coq. Viv. p. 10. no. 6, pl. 4. f. 6.

*Hab.* Madagascar ; Océan Indien ; Iles de la Société.

### 177. *TEREBRA INCOMPARABILIS*, Desh.

*T. testa elongato-turrita, acuminata, pallide albo-lutescente maculis magnis castaneis, quadratis, approximatis, biseriatim picta ; ultimo anfractu seriebus tribus ornato ; anfractibus angustis, convexiusculis, subinvolutis, late bimarginatis, transversim striato-punctatis ; margine suturali latiore, in anfractibus primis crenulato, in alteris plicato ; ultimo anfractu basi convexo, lævigato, canali brevi terminato ; apertura alba, elongato-angusta, subquadrata ; columella alba, cylindræa, uniplicata.*

Long. 85 mill., larg. 13.

*Hab.* Panama.

Collection Cuming.

Cette belle espèce a beaucoup de rapports avec le *Terebra maculata* de Lamarck : la coloration est la même, seulement les taches sont plus nombreuses et plus serrées ; les tours de spire sont en proportion plus étroits, plus enveloppants, et leur surface présente une structure particulière.

178. *TEREBRA LIGATA*, Hinds.

*Terebra ligata*, Hinds, Thes. Conch. p. 166. no. 48, pl. 45. f. 117, 118.

*Hab.* Iles Marquises.

179. *TEREBRA CONSOBRINA*, Desh.

*T. testa elongato-subulata, turrita, alba ; anfractibus planulatis, sulco vix perspicuo transversim divisis, maculis quadratis fuscis, biseriatim cinctis ; ultimo tricincto ; primis in margine suturali nodoso-crenatis, transversim striatis, alteris lævigatis ; apertura vix obliqua, elongato-angusta, subquadrata, intus alba, canali brevissimo, lato, terminata ; columella brevi, alba, superne uniplicata, extus angulo minimo circumdata.*

Long. 93 mill., larg. 12.

*Hab.* La Mer Rouge.

Collection Cuming et la mienne.

180. *TEREBRA INSIGNIS*, Desh.

*T. testa elongato-conica, acuminata, solida, alba, in medio anfractuum maculis magnis castaneis quadrato-oblongis irregularibus ornata ; anfractibus numerosis, angustis, convexiusculis, sulco impresso divisis, primis regularibus, plicato-arcuatis, alteris plicis distantioribus, crassis, ultimis lævigatis, ultimo brevi, biseriatim picto, basi coarctato ; apertura angusta, brevi, recta, canali brevi, lato profundoque terminata ; columella brevi, cylindracea, superne uniplicata, extus angulo prominenti, acuto, circumdata.*

Long. 78 mill., larg. 15.

*Hab.* Panama.

Collection Cuming.

181. *TEREBRA LINGUALIS*, Hinds.

*Terebra lingualis*, Hinds, Thes. Conch. p. 167. no. 49. pl. 43. f. 50.

*Hab.* Golfe de Papagayo ; Baie de Montijo.

182. *TEREBRA HISTRIO*, Desh.

*T. testa elongato-subulata, crassiuscula, pallide albo-lutescente, maculis longitudinalibus fusco-castaneis subundatis picta, ad suturas lineis rufo-rubrescentibus fimbriata, maculis in ultimo anfractu ad peripheriam interruptis ; anfractibus numerosis, angustis, planis, sulco divisis ; margine suturali plano, in primis anfractibus granuloso, in alteris plicato ; ultimo anfractu basi depressiusculo ; apertura angusta, parum obliqua, subquadrata,*

*canali brevi, contorto terminata ; columella alba, brevi, valde contorta.*

Long. 48 mill., larg. 11.

*Hab.* — ?

Ma Collection.

183. *TEREBRA HOPEI*, Lorois.

*Terebra hopei*, Lorois, Journ. de Conch. 1857, p. 388, pl. 12. f. 1.

*Hab.* — ?

184. *TEREBRA FLAMMEA*, Lamk.

*Terebra flammea*, Kiener, Icon. des Coq. Viv. p. 12. no. 8, pl. 2. f. 10.

*Hab.* Madagascar ; Océan de l'Inde.

185. *TEREBRA MYUROS*, Lamk.

*Buccinum strigilatum* (pro parte), Gmel. p. 3501.

*Buccinum commaculatum*, Gmel. p. 3502. no. 143.

*Terebra commaculata* (ex parte), Hinds, Thes. Conch. p. 170. no. 58 (exclusa Lamarckii).

*Terebra scabrella* (vide Lamk. An. s. Vert. 2 ed. t. x. p. 248. note).

*Hab.* Océan de l'Inde ; les Moluques.

186. *TEREBRA SCABRELLA*, Lamk.

*Terebra scabrella*, Lamk. An. s. Vert. 2 ed. t. x. p. 247. no. 19.

*Terebra myuros*, var., Kiener, Icon. des Coq. Viv. pl. 14. f. 34 a.

*Terebra commaculata* (ex parte), Hinds, Thes. Conch. p. 170. no. 58, pl. 42. f. 37.

*Hab.* Nouvelle Guinée.

187. *TEREBRA CONSORS*, Hinds.

*Terebra consors*, Hinds, Thes. Conch. p. 154. no. 9, pl. 42. f. 26.

*Hab.* Iles de la Société.

188. *TEREBRA ARGUS*, Hinds.

*Terebra argus*, Hinds, Thes. Conch. p. 154. no. 10, pl. 43. f. 64.

*Hab.* Iles de la Société.

189. *TEREBRA CHINENSIS*, Desh.

*T. testa elongato-turrita, angusta, subulata, albo-flavidula ; anfractibus numerosis, angustis, tenuiter transversim striatis, sulco impresso inæqualiter bipartitis, ultimo anfractu cylindræo, basi attenuato ; apertura elongato-angusta, subquadrata, margine acuto concavo ; columella cylindræa, lata, contorta.*

Long. 49 mill., larg. 7.

*Hab.* Les mers de la Chine.

Ma Collection.



## 190. TEREBRA TRICOLOR, Sow.

*Terebra tricolor*, Sow. Tank. Cat. App. p. 24.

*Terebra tæniolata*, Quoy & Gaim. Voy. de l'Astr. p. 446, pl. 36. f. 25, 26.

*Hab.* Tongatabou ; Ile St. Thomas.

## 191. TEREBRA LÆVIGATA, Gray.

*Terebra lævigata*, Gray, Proc. Zool. Soc. 1834, p. 61 ; Hinds, Thes. Conch. p. 171. no. 60, pl. 44. f. 93.

*Hab.* Ceylon.

## 192. TEREBRA VIRGINEA, Desh.

*T. testa elongato-angusta, subulata, lævigata, nitida, omnino candidissima ; anfractibus latis, planis, sulco divisis, sutura subcrenulata separatilis ; ultimo anfractu brevi, basi obtuso ; apertura brevi, obliqua, ad basin dilatata, profunde emarginata ; columella conica, simplici, basi extus angulo circumdata.*

Long. 52 mill., larg. 11.

*Hab.* Zanzibar.

Collection Cuming.

## 193. TEREBRA OBSOLETA, Desh.

*T. testa elongato-turrita, acuminata, angusta, pallide flavida ; anfractibus numerosis, angustis, stria impressa subæqualiter bipartitis ; margine suturali lato, obsolete plicato, lævigato, candido ; altera parte anfractuum transversim tenuiter striata, striis subæqualibus, minutis ; ultimo anfractu brevi, basi obtuso ; apertura minima, alba, subquadrata, basi anguste profundeque emarginata ; columella brevi, contorta, cylindræa.*

Long. 40 mill., larg. 7 mill.

*Hab.* — ?

Ma Collection.

## 194. TEREBRA BABYLONIA, Lamk.

*Terebra striata*, Gray (fide Hinds), Proc. Zool. Soc. 1834, p. 60 ; Kiener, Icon. des Coq. Viv. p. 38, pl. 14. f. 35.

*Hab.* Mers de la Chine ; Îles de la Société, &c.

Il faut exclure de l'espèce la Var. 35 a. de M. Kiener ; elle constitue une espèce distincte nommée *Terebra straminea* par M. Gray.

## 195. TEREBRA COLUMNARIS, Desh.

*T. testa elongato-subulata, angusta, alba ; anfractibus numerosis, primis convexiusculis, marginatis, ultimis convexiusculis, simplicibus, transversim minutissime striatis ; ultimo anfractu brevi, basi obtuso, canali brevi latoque terminato ; apertura minima, ovato-subquadrata ; columella contorta, cylindræa, angulo acuto extus marginata.*

Long. 47 mill., larg. 8.

*Hab.* — ?

Ma Collection.

196. *TEREBRA STRAMINEA*, Gray.

*Terebra straminea*, Gray, Proc. Zool. Soc. 1834, p. 62.

*Terebra babylonia*, var., Kiener, Icon. des Coq. Viv. pl. 14. f. 35 a.

*Hab.* Tranquebar; mer de la Chine.

197. *TEREBRA PALLIDA*, Desh.

*T. testa elongato-angusta, acuminata, subulata, omnino flavo-aurantia; anfractibus numerosis, angustis, primis planis, ultimis convexiusculis, sulco divisis, transversim tenue striatis, striis incisis, inæqualiter distantibus; margine suturali simplici, vix distincto; ultimo anfractu elongato, basi attenuato, tenuiter et obsolete striato; apertura elongata, angusta, canali longo, recto terminata, late profundeque emarginata; columella cylindræoconica.*

Long. 72 mill., larg. 11.

*Hab.* Les Iles Marquises.

Collection Cuming.

198. *TEREBRA CUMINGII*, Desh.

*T. testa pulcherrima, elongato-angusta, turrita, alba pallide lutescente; anfractibus triginta, angustis, sulco impresso divisis; margine suturali duplicato; altero convexiusculo, eleganter crenulato-plicato, transversim tenuiter striato; altero unica serie granulorum formato; anfractibus in medio parum excavatis, elegantissime costulis longitudinalibus striisque transversalibus clathratis, striis mediis superisque majoribus; ultimo anfractu brevi, superne obtuso, striato; apertura minima, quadrata, canali brevi angusto terminata; columella cylindræa, contorta, simplici.*

Long. 95 mill., larg. 12.

*Hab.* Chine.

Collection Cuming.

La plus belle et la plus remarquable espèce du genre.

199. *TEREBRA PRETIOSA*, Reeve.

*Terebra pretiosa*, Reeve, Proc. Zool. Soc. 1842, p. 200; Conch. Syst. t. ii. p. 245, pl. 274. f. 2.

*Hab.* Chine.

200. *TEREBRA FENESTRATA*, Hinds.

*Terebra fenestrata*, Hinds, Thes. Conch. p. 176. no. 74, pl. 44. f. 86.

*Hab.* — ?

✓ 201. *TEREBRA REGINA*, Desh.

*T. testa elongato-subulata, angusta, multispirata, alba, triseriatim maculis fuscis vel castaneis parvulis picta; anfractibus angustis, sulco impresso transversaliter divisis, lavigatis; margine tenuiter et eleganter crenulato, crenulis albis, interstitiis macula pallide fusca notatis; ultimo anfractu quadrifariam maculato, superne*

*coarctato, canali longo terminato; apertura elongato-angusta, subquadrata; columella brevi, uniplicata, valde contorta, extus angulo acuto proeminente oblique circumdata.*

Long. 89 mill., larg. 13.

*Hab.* Le Sénégal.

Collection Cuming.

202. *TEREBRA LIMA*, Desh.

*T. testa elongato-angusta, subulata, turrita, pallide flavicante, flammulis flavo-rufescentibus pallidis picta; ultimo anfractu basi fulvo tincto; anfractibus numerosis, angustis, sulco utroque latere marginato bipartitis, transversim striatis; longitudinaliter plicis undulatis, decussatis, in intersectionibus subgranulatis, asperatis; ultimo anfractu brevi, basi plano; apertura brevi, angusta, subquadrangulati, canali longo, angusto, contorto terminata; columella alba, contorta, in medio extus angulata.*

Long. 78 mill., larg. 11.

*Hab.* Les mers de la Chine.

Collection Cuming.

203. *TEREBRA SUCCINEA*, Hinds.

*Terebra succinea*, Hinds, Thes. Conch. p. 151. no. 4. pl. 42. f. 40.

*Hab.* — ?

204. *TEREBRA FORTUNII*, Desh.

*T. testa elongato-angustissima, subulata, subscalaroides, omnino candida; anfractibus numerosis, latis, convexiusculis, longitudinaliter costatis, transversim tenue sulcatis, decussatis; ultimo elongato, basi attenuato; apertura elongato-angusta, subquadrangulati, antice canali prælongo, angusto terminata.*

Long. 69 mill., larg. 9.

*Hab.* Les mers de la Chine.

Collection Cuming.

205. *TEREBRA MONILIS*, Quoy et Gaim.

*Terebra monilis*, Quoy et Gaim. Voy. de l'Astr. t. ii. p. 467, pl. 36. f. 21, 22.

*Hab.* Iles Marquises; Iles de la Société, Tahiti.

206. *TEREBRA SEROTINA*, A. Adams et Reeve.

*Terebra serotina*, A. Adams et Reeve, Voy. du Samarang, p. 30. no. 1, pl. 10. f. 20.

*Hab.* Japon.

207. *TEREBRA FUNICULATA*, Hinds.

*Terebra funiculata*, Hinds, Thes. Conch. p. 168. no. 51, pl. 43. f. 63.

*Hab.* — ?

208. *TEREBRA CORRUGATA*, Lamk.

*Terebra punctata*, Gray (teste Hinds), Proc. Zool. Soc. 1834, p. 61.

*Terebra corrugata*, Kiener, Icon. des Coq. Viv. p. 35. no. 20, pl. 13. f. 31 (exclusa varietate).

*Hab.* — ?

M. Kiener confond évidemment deux espèces sous ce nom. Sa variété *junior* constitue pour nous l'espèce suivante. Nous sommes redevable à M. Crosse de connaître en nature cette belle et rare espèce.

209. *TEREBRA BITORQUATA*, Desh.

*Terebra corrugata*, var. *junior*, Kiener, Icon. des Coq. Viv. p. 25. note, pl. 13. f. 31 a.

*T. testa elongato-turrita, angusta, acuminata, multispirata, pallide flava, flammulis longitudinalibus castaneis picta, punctulis concoloribus, interstitialibus in margine suturali regulariter dispositis; anfractibus angustis, superne ad suturam inflato-bimarginatis, marginibus inæqualibus, regulariter granulosis; margine inferiore majore; ultimo anfractu brevi, flammulis ad peripheriam interruptis; apertura brevi, subquadrata, margine dextro paulo excavato; columella brevi, cylindræa, contorta, basi anguste et profunde emarginata.*

Long. 75 mill., largeur à la base 15.

*Hab.* — ?

Collection de M. Crosse.

Nous soupçonnions depuis longtemps que la variété *junior* du *Terebra corrugata* de M. Kiener devait constituer une espèce distincte, mais n'ayant sous les yeux ni le type de Lamarck ni la variété de M. Kiener, nous avons hésité de les séparer jusqu'au moment où M. Crosse voulut bien nous communiquer un bel individu adulte de la variété de M. Kiener. Dès lors les doutes disparurent, car cette coquille est en effet parfaitement distincte du *corrugata*. Elle est particulièrement remarquable par la double collier de perles qui accompagne la suture, la rangée supérieure est la plus grosse et la plus épaisse, et l'intervalle des granulations est occupée par une linéole d'un beau brun.

210. *TEREBRA CINGULIFERA*, Lamk.

*Terebra cingulifera*, Kiener, Icon. des Coq. Viv. p. 39. no. 34, pl. 13. f. 30.

*Hab.* Nouvelle Hollande.

En comparant à celle de M. Kiener la figure du *cingulifera* de M. Hinds, on y remarque des différences telles que l'on pourrait séparer cette dernière sous un nom spécifique particulier.

211. *TEREBRA LOROISI*, Desh.

*Terebra nebulosa*, Lorois (nec Sow. nec Kiener), Journ. de Conch. 1858, p. 90, pl. 1. f. 4.

*Hab.* — ?



Nous avons substitué au nom de *nebulosa*, qui ne pouvait lui rester, celui de l'amateur plein de zèle auquel est dû la connaissance de cette espèce.

212. *TEREBRA ALBOMARGINATA*, Desh.

*T. testa elongato-turrita, angusta, acuminata, aurantiaca, albo-marginata; anfractibus numerosis, angustis, planis, sulco impresso inæqualiter divisus, transversim striato-punctatis, striis quatuor; ultimo anfractu brevi, obtuso, canali brevi, contorto, angusto terminato; apertura minima, pallide lutea, ovato-subquadrata, angusta, extremitatibus attenuata; columella cylindræcea, contorta, uniplicata.*

Long. 44 mill., larg. 8.

*Hab.* L'Australie.

Collection Cuming.

Très-belle espèce rapprochée du *cingulifera* de Lamk., mais parfaitement distincte de ses congénères par sa coloration remarquable et les autres accidents de sa surface; le bourrelet blanc qui suit la suture est plissé et finement crénelé.

213. *TEREBRA EXIMIA*, Desh.

*T. testa elongato-angusta, subulata, candida, ad suturam rufo regulariter punctata; anfractibus numerosis, angustis, subæqualiter sulco impresso divisus; margine suturali convexiusculo, crenulato; in altera parte anfractuum striis tribus granulosis, profunde punctatis; columella brevi, cylindræcea, biplicata.*

Long. 92 mill., larg. 8.

*Hab.* — ?

Ma Collection.

214. *TEREBRA DECORATA*, Desh.

*T. testa minima, elongato-angusta, acuminata, alba, fusco-castanea, biseriatim punctata, ultimo anfractu punctulis triseriatibus; anfractibus numerosis, angustis, lævigatis, sulco impresso divisus; margine suturali candido, convexo, noduloso; apertura brevissima, subquadrangulæri; columella brevi, cylindræcea, subuniplicata, extus angulo vix prominente circumdata.*

Long. 28 mill., larg. 6.

*Hab.* Pidang (Ile Sumatra).

Collection Cuming.

215. *TEREBRA TESSELLATA*, Gray.

*Terebra tessellata*, Gray, Proc. Zool. Soc. 1834, p. 61; Hinds, Thes. Conch. p. 166. no. 47, pl. 45. f. 124.

*Hab.* — ?

216. *TEREBRA ARCHIMEDIS*, Desh.

*T. testa elongato-subulata, turrita, albo-eburnæa; anfractibus numerosis, angustis, transversim inæqualiter tricostatis, costula suturali*

*proeminentiore interstitiis profundis, minutissime punctulatis; ultimo anfractu brevissimo, basi depresso, transversim tenuiter sulcato; apertura minima, brevi, ovato-subquadrata, alba; columella cylindracea, brevi, ad apicem contorta, canali brevi, latoque terminata.*

Long. 31 mill., larg. 6.

Hab. — ?

Ma Collection.

217. *TEREBRA AMANDA*, Hinds.

*Terebra amanda*, Hinds, Thes. Conch. p. 166. no. 46, pl. 45. f. 100.

Hab. Détroit de Macassar.

218. *TEREBRA CIRCINATA*, Desh.

*T. testa elongato-subulata, angusta, fusca; anfractibus numerosis, angustis, in medio excavatis, ad suturam biserialim plicato-crenatis, bimarginatis, in medio transversim quadristriatis; ultimis anfractibus plicis longitudinalibus decussatis, ultimo ad peripheriam sulco majore crenulato circumdato; apertura minima, elongato-angusta, canali contorto, brevi latoque terminata; labro sinistro proeminente.*

Var.  $\beta$ . *Testa minore margine, suturali latiore.*

Long. 42 mill., larg. 6.

Hab. Mers de la Chine.

Collection Cuming et la mienne.

219. *TEREBRA ACUTA*, Desh.

*T. testa turrato-subulata, angusta, polygyrata, omnino fusco-fuliginea; anfractibus numerosis, angustis, plano-concaviusculis, sulco inæqualiter divisus, transversim tenue striatis; margine suturali convexo, in anfractibus primis granuloso, in sequentibus plicato, crenato; ultimo anfractu brevi, basi striato; apertura minima, intus fusca, canali brevi lato terminata; columella brevi, cylindracea, marginata.*

Long. 97 mill., larg. 7.

Hab. Mers de la Chine.

Collection de M. Cuming.

220. *TEREBRA TRISERIATA*, Gray.

*Terebra triseriata*, Gray, Proc. Zool. Soc. 1834, p. 61; Hinds, Thes. Conch. p. 171. no. 59, pl. 45. f. 119.

Hab. Philippines.

221. *TEREBRA PRÆLONGA*, Desh.

*T. testa elongato-angustissima, acuta, prælonga, polygyrata, omnino fulva; anfractibus triginta, angustis, planis, transversim quinquestriatis, ad suturam inæqualiter bimarginatis, marginibus in anfractibus primis simplicibus, in ultimis granulosis; ultimo anfractu brevi, ad peripheriam angulo granuloso circumdato, basi depresso, striato, canali contorto, brevi, ambitu dilatato, terminato; aper-*

*tura brevi, minima, quadrangulari; margine sinistro paulo expanso; columella cylindracea, brevi, contorta, paulo excavata.*

Long. 93 mill., larg. 9.

*Hab.* Port Curtis.

Collection Cuming.

La pointe de la coquille est cassée ; entière elle devait avoir au moins dix centimètres de longueur. Il existe peu d'espèces dans le genre *Terebra* qui soient aussi longues et aussi étroites en proportion que celle-ci ; aussi c'est avec le *Terebra triseriata* qu'elle a le plus de rapports.

Notre travail sur le genre *Terebra* resterait incomplet et défectueux, si, à la suite du catalogue général des espèces qui peuvent rester, nous ne donnions la liste de celles qui sont douteuses, ou qui forment de fâcheux doubles emplois dans la nomenclature. Dans cette liste se trouvent comprises celles des espèces de Gmelin réunies dans le groupe du genre *Buccinum*, qui à l'instar de celui de Linné représente le genre *Terebra* d'Adanson et des conchyliologues modernes.

**BUCCINUM ACICULA**, Gmel. p. 3503. no. 152.

Pour une figure de Lister, pl. 1055. f. 7, représentant le *Pyrena terebralis*, Lamk., *Strombus ater*, Linn.

**TEREBRA ACICULINA**, Lamk.

Espèce douteuse dont il faut retrancher le *Buccinum cinereum* de Born. M. Kiener la rend plus difficile encore à déterminer parce qu'il range sous ce nom trois espèces bien distinctes. Laquelle représente le type de Lamarck ? nous l'ignorons.

**BUCCINUM ACUS**, Gmel. p. 3502. no. 141.

*Acus sartoria*, Martini, t. 4. f. 1451. Espèce indéterminable par la défectuosité de la figure ; il n'est pas bien certain pour nous qu'elle appartienne au genre *Terebra*.

**TEREBRA AFRICANA**, Gray, Griff. Anim. Kingd. pl. 23. f. 5.

Double emploi du *Terebra variegata*, Gray.

**TEREBRA ALBA**, Gray, Proc. Zool. Soc. 1834, p. 60.

Espèce douteuse incomplètement décrite et non figurée.

**BUCCINUM ASPERUM**, Gmel. p. 3503. no. 148.

Deux espèces figurées très-incorrectement dans Lister, des *Fusi* ou des *Pleurotomæ* indéterminables.

**TEREBRA BUCCINOIDEA**, Blainv.

Nom donné par Blainville au *Miran* d'Adanson, *Buccinum politum*.

**BUCCINUM CANALICULATUM**, Gmel. p. 3505. no. 164.

Espèce faite sur une mauvaise figure de d'Argenville représentant probablement un tronçon de *Turritella* indéterminable.

TEREBRA CARNEA, Perry.

Double emploi du *T. dimidiata*.

TEREBRA CANCELLATA, Gray (nec Quoy et Gaimard), Proc. Zool. Soc. 1834, p. 61.

Espèce douteuse non figurée et très-incomplètement décrite.

BUCCINUM CHALYBEUM, Gmel. p. 3504. no. 158.

Pour une figure indéterminable de Rumphius appartenant cependant au genre *Terebra*.

BUCCINUM COMMACULATUM, Gmel.

Nous renvoyons aux observations que nous avons faite à son sujet à l'article du *Terebra myuros*.

TEREBRA COSTATA, Menke, Synops. Moll. p. 84.

Double emploi du *Buccinum hastatum*, *Terebra hastata*, Kien.

TEREBRA COSTATA, Küster.

Ce nom avait déjà été employé trois fois avant M. Küster ; par Borson en 1823 pour une espèce fossile, par Menke en 1831 comme nous venons de le dire, enfin par Lea en 1833 pour une espèce fossile d'Amérique. Ce *costata* de M. Küster n'est point figuré ; il reste pour nous parmi les espèces douteuses.

BUCCINUM CUSPIDATUM, Gmel. p. 3505. no. 166.

Pour une figure de Seba représentant une *Melania*.

BUCCINUM DIGITELLUS, Gmel. p. 3504. no. 156.

Un *Triton*, très-jeune, indéterminable, figuré par Rumphius.

BUCCINUM EDENTULUM, Gmel. p. 3505. no. 162.

C'est avec doute le *Terebra caerulea*, d'après une très-mauvaise figure de d'Argenville.

TEREBRA ELEGANS, Küster, Chemn. 2<sup>e</sup> ed. p. 31.

Espèce douteuse non figurée, quoique l'auteur renvoie à une planche 6 qui n'a point encore paru.

TEREBRA ELONGATA, Gray, dans Wood, Ind. Test. Supp. pl. 4. f. 25.

Double emploi du *T. strigata* de Sowerby.

BUCCINUM FASCIOLATUM, Gmel. p. 3504. no. 153.

Absolument indéterminable, même le genre. La figure de Bonanni, à la quelle Gmelin renvoie, représente une coquille travaillée et méconnaissable.

TEREBRA FELINA, Sow. Tank. Cat. p. 76.

Double emploi du *Terebra tigrina*.



TEREBRA FLAMMEA, Lesson, Illustr. Zool. pl. 48.

Double emploi de la *Terebra strigata*, Sow.

BUCCINUM FLUMINEUM, Gmel. p. 3503.

La fig. 13 de la pl. 118 de Lister, à laquelle Gmelin renvoie, représente une *Melania*.

BUCCINUM FLUVIATILE, Gmel. p. 3504. no. 159.

Pour une *Melania* mal figurée dans Rumphius, Mus. pl. 30. f. P.

TEREBRA FUSCA, Perry.

Double emploi de la *Terebra subulata*.

TEREBRA FUSCOMACULATA, Sow. Tank. Cat. p. 23.

D'après M. Hinds ce serait un double emploi de la *T. senegalensis*.

BUCCINUM GEMINUM, Linn. Mant. p. 550.

Description malheureusement trop courte ; elle ne permet pas la détermination de l'espèce.

TEREBRA GRACILIS, Gray, Proc. Zool. Soc. 1834, nec Lea, 1833.

M. Hinds a donné à l'espèce le nom de *frigata*.

TEREBRA GRANULOSA, Lamk.

C'est un *Buccinum* du groupe des *Bullia*.

BUCCINUM HECTICUM, Linn.

Espèce incertaine, diversement interprétée par les auteurs. Sous ce nom Chemnitz représente une variété du *dimidiata*, mais en réalité cette opinion n'a rien qui la justifie dans la description et la synonymie de Linné. Voyez nos observations sur cette espèce dans le seconde édition de Lamarck et celles de M. Hanley dans son savant ouvrage, 'Ipsa Linnæi Conchylia,' p. 260.

TEREBRA KNORII, Gray, Proc. Zool. Soc. 1834, p. 61.

Double emploi du *Terebra chlorata*, Lamk.

TEREBRA LEVIS, Gray, Proc. Zool. Soc. 1834, p. 61.

M. Hinds affirme qu'après l'avoir examinée il a trouvé cette espèce faite avec un misérable specimen de la *T. muscaria* ou de l'*oculata*.

TEREBRA LINEOLATA, Sow. Tank. Cat. p. 76.

*Buccinum* voisin du *B. vittatum*.

BUCCINUM LIVIDULUM, Gmel. p. 3505.

Espèce faite sur une mauvaise figure de Gualtieri (pl. 56. f. F) représentant un *Cerithium*.

TEREBRA MACULATA, Perry.

Double emploi de la *T. crenulata*, Lamk.

BUCCINUM MONILE, Linn. Mant. p. 550.

Malheureusement la description trop courte de cette espèce la laisse parmi les indéterminables.

BUCCINUM MUCRONATUM, Gmel. p. 3504. no. 155.

La figure de Bonanni à laquelle renvoie Gmelin représente l'*Achatina columna*, Müller.

BUCCINUM MURICINUM, Gmel. p. 3503. no. 149.

La figure de Lister citée représente un *Triton* alongé.

BUCCINUM MURINUM, Linn. Syst. Nat. ed. 12. p. 1206.

Espèce Linnéenne douteuse fondée sur une figure très-incorrecte de Gualtieri (pl. 57. f. P.). La description est tellement brève qu'elle ne peut suppléer à l'insuffisance de la figure. M. Hanley n'ayant pas trouvé l'espèce dans la propre collection de Linné n'a pu faire cesser le doute à son égard.

TEREBRA NEBULOSA, Kiener.

Ce nom de *nebulosa* avait été appliqué dès 1825 (Tank. Cat. par Sowerby) à une espèce que M. Kiener ne connut pas sans doute, car il l'attribua plus tard à une espèce très-différente à laquelle M. Hinds donna le nom de *Terebra argus*.

BUCCINUM NIVEUM, Gmel. p. 3504. no. 154.

Probablement une variété de la *Terebra caerulea*.

TEREBRA NUBECULATA, Sow. Tank. Cat. App. p. 25.

Espèce restée incertaine depuis la publication, et que M. Hinds n'a pu retrouver.

BUCCINUM OBLIQUUM, Gmel. p. 3504. no. 157.

La figure de Rumphius citée par Gmelin représente à la vérité une *Terebra* rapproché de notre *T. chinensis*, mais néanmoins indéterminable.

TEREBRA PETITII, Kiener.

Rapportée à tort par M. Hinds à la *T. rudis* de Gray, cette espèce est simplement un double emploi de la *T. dislocata*, Say.

BUCCINUM PHALLUS, Gmel. p. 3503. no. 146.

M. Pfeiffer dans son Index de Martini et Chemnitz rapporte au *Pleurotoma buccinoides* de Lamarck la figure de Martini dont Gmelin s'est servi pour le *B. phallus*.

TEREBRA POLITA, Gray, Proc. Zool. Soc. 1834, p. 63.

C'est le *Buccinum politum* de Lamk., le *Miran* d'Adanson.

BUCCINUM PUGIO, Gmel. p. 3505. no. 163.

Figure de d'Argenville, qui représente probablement une jeune individu de la *T. senegalensis*.

TEREBRA PUNCTATA, Gray, Proc. Zool. Soc. 1834, p. 61.

D'après M. Hinds cette espèce serait un double emploi de la *T. corrugata* de Lamarck.

TEREBRA PUNCTATO-STRIATA, Gray, Proc. Zool. Soc. 1834, p. 61.

TEREBRA PUNCTULATA, Sow. Tank. Cat. App. p. 24.

Ces deux espèces selon M. Hinds sont des doubles emplois de la *T. cingulifera* de Lamarck.

BUCCINUM PUNCTULATUM, Gmel. p. 3503. no. 151.

Lister, Conch. pl. 979. f. 38, *Cerithium* indéterminable.

BUCCINUM RADIATUM, Gmel. p. 3504. no. 160.

La figure citée de Gualtieri (pl. 52. f. D.) représente un *Cerithium* indéterminable.

TEREBRA SANDWIZENSIS.

Nous ne connaissons ni l'origine ni l'application de ce nom mentionné par M. Hinds à la fin de sa Monographie.

TEREBRA STRIATA, Quoy et Gaim. Voy. de l'Astr.

Les auteurs ignoraient que le nom de *striata* avait été donné par Basterot en 1825 à une espèce fossile de Bordeaux ; ils l'ont appliqué à une espèce vivante à laquelle le nom d'*affinis* a été donné par M. Gray. Ce qui n'a pas empêché ce dernier naturaliste d'attribuer ce nom de *striata* à une coquille depuis longtemps connue sous le nom de *babylonia* de Lamk.

TEREBRA STRIATULA, Kiener, Icon. des Coq. Viv. (non Lamk.).

L'auteur confond deux espèces sous ce nom, qui ne sont ni l'une ni l'autre le *striatula* de Lamk. L'une nous paraît être le *Terebra verreauxi*, et l'autre le *strigilata* de Linné.

BUCCINUM SUCCINCTUM, Gmel. p. 3502. no. 142.

Espèce très-douteuse faite sur une très-imparfaite figure de Martini (t. 4. f. 1451) ; nous doutons qu'elle soit du genre *Terebra*. Cependant M. Pfeiffer dans son Index la considère comme bonne espèce et dit l'avoir dans sa collection ; il serait bien utile que le savant conchyliologue en donnât une description et une bonne figure.

TEREBRA TENIOLATA, Quoy et Gaim.

Double emploi de la *Terebra tricolor* de Sowerby.

TEREBRA TAHITENSIS, Gray, Proc. Zool. Soc. 1834, p. 61.

C'est un Buccin, *Buccinum tahitense*, Gmel.

BUCCINUM TUBERCLATUM, Gmel. p. 3503. no. 150.

Gmelin renvoie à une figure de Lister (pl. 958. f. 11 b) qui représente un véritable Buccin.

BUCCINUM VARICOSUM, Gmel. p. 3505. no. 165.

Variété de la *Terebra crenulata*.

BUCCINUM VIRGINEUM, Gmel. p. 3505. no. 168.

C'est encore une *Melania* d'après la figure citée de Lister, pl. 113. f. 7.

TEREBRA VITTATA, Lamk.

C'est un Buccin (*B. vittatum*, Linn.) du groupe de *Bullia* de M. Gray.

TEREBRA ZEBRA, Kiener.

Double emploi de la *T. strigata*, Sow.

Pour compléter notre travail sur le genre *Terebra*, il faudrait ajouter ici la liste des espèces fossiles. Déjà nous avons rassemblé de nombreux matériaux, nous comptons plus de 80 noms inscrits ; mais nous n'avons pu nous procurer un grand nombre d'espèces qu'il faudrait comparer pour en assurer la synonymie. Nous sommes donc forcé d'ajourner à un moment plus propice cet appendix intéressant d'une monographie du genre *Terebra*.

14. A SYNOPSIS OF THE THRUSHES (TURDIDÆ) OF THE NEW WORLD. BY PHILIP LUTLEY SCLATER, M.A., F.L.S., SECRETARY TO THE SOCIETY.

The true Thrushes, of the Linnean genus *Turdus* as now restricted, almost perfectly cosmopolitan in their range, since they occur in every part of the world, tropical and temperate, with the exception of Australia, are found in great abundance in America. Counting the *Merulæ* of some authors amongst their number, for I believe that their structural differences from *Turdus* are unappreciable, we find nearly forty species of this genus already known to occur in the New World ; and, from the number of species which have escaped detection until quite recently, we may reasonably presume that we are not yet acquainted with all the American members of this group. It is useless to enlarge here upon the characteristics of these well-known birds. Suffice it to say, that, as far as we know, their general habits and manners are the same in the New World as in the Old, and that in the few cases in which we are acquainted with the mode of nesting and peculiarities of the eggs, these also are similar. Connected with the typical Thrushes of America is a small group of birds forming the genus *Catharus* of Prince Bonaparte. This section, until lately known to have but one representative, is now extended to embrace seven species,—Mr. Gould's type *Malacocichla*, founded upon one of them, being inseparable generically from *Catharus*. The differences indeed between these birds and the true Thrushes are but slight—consisting in rather longer



tarsi and shorter wings and tail, which render the group more fit for terrestrial and less adapted to arboreal life. Commencing our subfamily of Thrushes with the six *Cathari*, we enter *Turdus* by the typical small Thrushes of N. America, already alluded to, of which there seem to be eight species, difficult to be distinguished *inter se*. The second group of the genus—a section denominated by Prince Bonaparte *Planesticus*—in which the sexes are similar, and the throat is either spotted or striated,—is composed of twenty species, amongst which is the well-known Robin of the Americans, *Turdus migratorius*. A third group, in which the plumage is dusky and uniform, but the sexes are still alike, may be called *Semimerula*. It is composed of five species. There remain the Black-birds—of the section *Merula*—in which the sexes are different. Of these in the New World there appear, according to the present state of our knowledge, to be at least six, which make up the large number of thirty-nine species of American *Turdi*.

The genera *Cichlerminia* and *Margarops*, which in the greater development of the first spurious primary (always small among the true Thrushes) show an abnormal tendency, contain three or four species peculiar to the Antilles. They may, perhaps, be arranged most naturally next to *Turdus*—and serve to lead off towards the Mock-birds, the several genera of which follow next in my arrangement. The typical Mock-birds show in many respects striking differences, when compared with the true Thrushes. Being adapted for a life inside the thick bushes and near the ground, they are distinguished by their low crown, their short and graduated wings—the first (spurious) primary being much lengthened and generally half as long as the second,—and their longer and more graduated tail.

These characters and the strongly-developed scutella on the front of the tarsi, which are wanting in *Turdus*, have induced recent authors to disconnect them entirely from the Thrushes and arrange them with the Wrens. But there are some forms (such as *Galeoscoptes*, *Cichlerminia*, and *Melanotis*) so clearly intermediate in one or other of these respects, that I am unable to draw the line of demarcation between the two groups, and for the present am inclined to consider the affinities of the Mock-birds as closer with the Thrushes than with the Wrens. In their mode of nesting and in the colour of the eggs (points by no means to be neglected in considering natural relationships), the Mock-birds also exhibit Thrush-like characters.

The series of Mock-birds may be best commenced with *Galeoscoptes*—embracing a well-known North American type—and two Antillean species nearly allied to each other, the strong Thrush-like appearance (and habits) of which have induced me to call them subgenerically *Mimocichla*. Next comes the singular type *Melanoptila*, of which the nearest ally is perhaps *Galeoscoptes carolinensis*. *Melanotis* with its two species is also nearly affine to *Galeoscoptes*, and perhaps hardly separable generically therefrom. *Rhamphocinclus* and *Cinclocerthia*, on the other hand, are so aberrant in form that they have been ranged by some authors in a different group altogether; but there can be no doubt that their right place is here. In the

elongated and incurved bill, some species of *Harporhynchus*, which next follows, shows much resemblance to them. These latter birds are clearly connected by *Oreoscoptes* with the typical Mock-thrushes of the genus *Mimus*, in which group an accurate comparison of specimens and a careful attention to geographical distribution are requisite to enable the student to distinguish the numerous closely-allied and similarly-clad species.

## Genus I. CATHARUS.

*Catharus*, Bp. Consp. i. p. 278 (1850).

*Malacocichla*, Gould, P. Z. S. 1854, p. 285.

### *α. Catharus.*

#### 1. CATHARUS MELPOMENE.

*Turdus melpomene*, Cab. Mus. Hein. p. 5.—*Catharus aurantiirostris*, Sclater, P. Z. S. 1856, p. 294 ; 1858, p. 97 ; Ibis, 1859, p. 6.

*Cinnamomeo-brunneus, uropygio, alis extus et cauda rufescentioribus : subtus pallide cineraceus, gula et ventre medio crisoque dilutioribus, albis : periophthalmiis, rostri basi et pedibus flavis.*

Long. tota 7·0, alæ 3·1, caudæ 2·6, tarsi 1·25.

*Hab.* Southern Mexico, near Cordova (*Sallé*) ; Orizaba (*Bott.*) ; Guatemala (*Skinner*).

*Mus.* P. L. S.

#### 2. CATHARUS AURANTIIOSTRIS.

*Turdus aurantirostris*, Hartl. Rev. Zool. 1850, p. 158 ; Contr. Orn. 1851, pl. 72.—*Catharus immaculatus*, Bp. Consp. p. 278.

*Supra dilute olivaceus : subtus albidus ; pectore, hypochondriis collique lateribus cinerascens : subcaudalibus albis : gula cinerascens paulum variegata : rostro, pedibus et periophthalmiis flavis.*

*Hab.* Venezuela.

*Mus.* Lugd.

I have not had an opportunity of comparing specimens of these two nearly allied species ; but Dr. Hartlaub considers the present bird as distinct.

#### 3. CATHARUS OCCIDENTALIS, sp. nov.

*Cinnamomeo-brunneus, vertice saturatiore : subtus cineraceus, gula albicante, cervice et pectore fusco subobsolete flammulatis : ventre medio et crisso albis : rostro fusco-nigricante, hujus basi et pedibus pallide corylinis.*

Long. tota 6·5, alæ 3·5, caudæ 2·9, tarsi 1·15.

*Hab.* Western Mexico, Oaxaca, Totontepec (*Boucard*).

*Mus.* P. L. S.

M. Sallé's recent collections from M. Boucard contain four examples of this *Catharus*. It seems clearly distinct from *C. melpomene* of Eastern Mexico, in its rather larger size, shorter tarsi, and

spotted neck and breast; these parts in *C. melpomene* being immaculate.

*β. Malacocichla.*

4. CATHARUS DRYAS.

*Malacocichla dryas*, Gould, P. Z. S. 1854, p. 285, pl. 75; Ibis, 1859, p. 7.

*Supra saturate olivaceus, pileo et capitis lateribus nigerrimis; subtus pallide ochraceus, pectore olivaceo variegato: rostro et pedibus flavis.*

Long. tota 7·0, alæ 3·75, caudæ 2·8.

*Hab.* Guatemala (*Skinner*).

*Mus.* Brit.

5. CATHARUS MACULATUS.

*Malacocichla maculata*, Sclater, P. Z. S. 1858, p. 64.

*Supra nigricanti-schistaceus, pileo et capitis lateribus nigerrimis: subtus ochraceuscenti-albidus, lateraliter schistaceus: gula, pectore et ventris lateribus nigro maculatis: rostro et pedibus flavis.*

Long. tota 7·0, alæ 3·6, caudæ 2·8.

*Hab.* Ecuador, banks of the Napo.

*Mus.* Brit.

6. CATHARUS MEXICANUS.

*Malacocichla mexicana*, Bp. Compt. Rend. xliii. p. 998, et Orn. Foss. p. 35.

*Cinereo-olivaceus, subtus albido-fuscescens; abdomine medio albo; pileo nigro: rostro flavo-aurantiaco, pedibus flavo-corneis.*

Long. tota 6·0, alæ 3·5, caudæ 2·4.

*Hab.* Southern Mexico, near Jalapa (*Sallé*); Guatemala, prov. Vera-Paz (*Delattre*).

*Mus.* Derbiano, P. L. S.

7. CATHARUS FUSCATER.

*Myioturdus fuscater*, Lafr. Rev. Zool. 1845, p. 341. — *Catharus fuscater*, Sclater, P. Z. S. 1859, p. 136.

*Schistacescenti-niger; subtus cinerascentior, abdomine medio albo, gutture fuscescens: rostro aurantiaco, pedibus flavo-corneis.*

Long. tota 6·5, alæ 3·5, caudæ 3·0.

*Hab.* Interior of New Granada; Ecuador, near Pallatanga (*Fraser*).

*Mus.* Brit., P. L. S.

Genus II. TURDUS.

*Turdus*, Linn. S. N. (1766).

*Merula*, Leach, Cat. Brit. Mus. (1816).

*Planesticus*, Bp. Ann. Sc. Nat. 1854, p. 118.

*α. Turdus.*

*Minores : subtus plus minusve guttulati : sexus inter se similes.*

1. *TURDUS MUSTELINUS.*

*Turdus mustelinus*, Gmel. S. N. i. p. 817; Vieill. Ois. Am. Sept. pl. 62; Aud. B. Am. iii. pl. 144; Bp. Consp. p. 270; Baird, Rep. p. 212; Sclater, P. Z. S. 1856, p. 294; Cab. Journ. f. Orn. 1855, p. 470; Ibis, 1859, p. 6.—*Turdus melodus*, Wils. Am. Orn. i. pl. 2.

*Supra clare cinnamomeo-brunneus, pileo intensiore; subtus pure albus, in lateribus cervicis, pectore et ventre maculis subtriangularibus nigricantibus distincte notatus: rostro corneo, basi flavida: pedibus flavis.*

Long. tota 7·5, alæ 4·1, caudæ 2·75.

*Hab.* Eastern United States to the Missouri; Mexico; Cordova (Sallé); Guatemala; Cuba, and Jamaica (in winter).

*Mus.* Brit., P. L. S.

I have not seen *Turdus densus*, Bp. (Compt. Rend. xxviii. p. 2; Notes Orn. p. 26), from Tabasco in Mexico, said to be nearly allied to *T. mustelinus*. The type is in the Museum at Brussels. I doubt its distinctness.

2. *TURDUS PALLASI.*

*Turdus pallasi*, Cab. Wieg. Arch. 1847, i. p. 205; Mus. Hein. p. 5; Journ. f. Orn. 1855, p. 470; Baird, Rep. p. 212.—*Turdus solitarius*, Wils. Am. Orn. v. p. 95; Bp. Consp. p. 270; Sclater, P. Z. S. 1857, p. 212.—*Turdus minor*, Bp. Obs. Wils. Orn. no. 72.—*Turdus guttatus*, Cab. in Tsch. Faun. Per. p. 187.

*Supra pallide olivaceo-brunneus, uropygio et cauda rufis: subtus albus, pectore ochracecente: gutturis lateribus et pectore nigro triangulariter maculatis: hypochondriis subolivaceis.*

Long. tota 7·5, alæ 3·5, caudæ 2·5.

*Hab.* Eastern N. America to the Mississippi and southwards to Mexico; Orizaba (*Rotteri*); Cuba (*Gundlach*).

*Mus.* P. L. S.

3. *TURDUS NANUS.*

*Turdus nanus*, Aud. Orn. Biogr. v. p. 201; B. Amer. iii. pl. 147; Baird, Rep. p. 213.

*Similis Turdo pallasi, sed minor: subtus purius albus: lateribus magis cinerascens nec cinnamomescentibus: colore caudæ saturatione.*

Long. tota 6·5, alæ 3·3, caudæ 2·9.

*Hab.* Pacific slope of N. America, replacing *T. pallasi*: California and Oregon.

*Mus.* P. L. S.

4. *TURDUS SILENS.*

*Merula silens*, Sw. Phil. Mag. 1827, p. 369; North. Zool. ii. p. 186; Sclater, P. Z. S. 1858, p. 300.



*Similis Turdo pallasi, sed colore corporis superi pallidiore, cinerascens et multo minus cinnamomeo : cauda flavicanti-brunnea et pallidiore.*

*Hab.* Southern Mexico ; Oaxaca (*Boucard*).

*Mus.* P. L. S.

Further specimens are requisite to confirm the validity of this species of Thrush. Having now examples of *Turdus nanus*, I should be inclined to refer it to that species, were it not of rather larger proportions.

##### 5. TURDUS FUSCESCENS.

*Turdus fuscescens*, Steph. G. Z. x. p. 182 ; Baird, Rep. p. 214.—*Turdus mustelinus*, Wils. Am. Orn. v. pl. 43.—*Turdus wilsoni*, Bp. ; Cab. in Tsch. Faun. Per. p. 188 ; Journ. f. Orn. 1855, p. 470.

*Supra rufescenti-brunneus, subtus albus ; gutture et pectore antico flavido-rufescentibus, maculis parvis triangularibus brunnescenti-olivaceis parce aspersis.*

Long. tota 6·5, alæ 3·8, caudæ 2·8.

*Hab.* Eastern North America to the Missouri.

*Mus.* P. L. S.

##### 6. TURDUS USTULATUS.

*Turdus ustulatus*, Nutt. Man. Orn. i. p. 400 (1840) ; Baird, Rep. p. 215.

*Hab.* Coast region of Oregon and Washington Territory.

I have not seen examples of this Thrush, and can only refer to Prof. Baird's description.

##### 7. TURDUS SWAINSONI.

*Turdus swainsoni*, Cab. in Tsch. F. P. p. 188 ; Mus. Hein. p. 5 ; Baird, Rep. p. 216 ; Ibis, 1859, p. 6.—*Turdus minor*, Gm. (part.) et Bp. Consp. p. 271 ; Sclater, P. Z. S. 1857, p. 212.—*Turdus olivaceus*, Giraud.—*Turdus minimus*, Lafr. R. Z. 1848, p. 5 ; Sclater, P. Z. S. 1844, p. 111 ; 1855, p. 145.

*Supra pallide olivaceus unicolor : subtus albus ; gula et pectore dilute flavescenti-brunneis, gulæ lateribus et pectore toto maculis triangularibus fusco-nigris crebro sparsis.*

Long. tota 7·0, alæ 3·7, caudæ 2·8.

*Hab.* Eastern North America to Greenland, and southwards to Mexico, Orizaba (*Bolt.*) ; Guatemala ; New Granada, Ecuador, and Peru ; Cuba (*Gundlach*) ; Gualaquiza, Ecuador (*Fraser*).

*Mus.* Brit., P. L. S.

##### 8. TURDUS ALICIÆ.

*Turdus alicia*, Baird, Rep. p. 217.

*Hab.* Interior of N. America—Illinois and Upper Missouri.

I have not seen this bird.

β. *Planesticus*.

*Majores : subtus unicolores, gula nigro striata aut punctata : sexus inter se similes.*

9. *TURDUS PHÆOPYGUS*.

*Turdus phæopygus*, Cab. in Schomb. Guian. iii. 666, et Mus. Hein. p. 4; Sclater, P. Z. S. 1858, p. 64.—*Turdus jamaicensis*, Jard. Ann. Nat. Hist. xx. p. 329 (1847), nec Gm.

*Supra saturate olivaceo-brunneus, uropygio cinereo : subtus pallide cinereus, gula alba nigro striata ; collo antico et crisso albis : rostro et pedibus nigricanti-fuscis.*

Long. tota 7·0, alæ 3·9, caudæ 3·0.

*Hab.* Guiana (Schomb.); Northern Brazil; Venezuela; Trinidad; Tobago (Kirk); New Granada; Eastern Ecuador, Rio Napo.

*Mus.* P. L. S.

Easily known by its small size, and grey rump in contradistinction to the cinnamomeous back.

10. *TURDUS JAMAICENSIS*.

*Turdus jamaicensis*, Gm. S. N. i. p. 809; Gosse, B. Jam. p. 142, et Ill. pl. 24. — *Turdus capucinus*, Hartl.; Bp. Consp. p. 271. — *Turdus lereboulleti*, Bp. Compt. Rend. xxxviii. p. 3, et Notes Orn. p. 27.

*Saturate ardesiacus, capite undique et striis in gula alba obscure cinnamomeis : subtus pallide cinereus, collo antico et ventre medio albis : rostro nigro ; pedibus clare fusco-nigris.*

Long. tota 8·7, alæ 4·6, caudæ 3·6.

*Hab.* Jamaica (Gosse).

*Mus.* Brit., P. L. S.

11. *TURDUS CROTOPEZUS*.

*Turdus leucomelas*, Vieill. Nouv. Dict. xx. 226, et Enc. Méth. p. 644, ex Azara, no. 80?—*Turdus crotopezus*, Licht. Doubl. p. 38; Cab. Mus. Hein. p. 3; Burm. Syst. Ueb. iii. p. 123; Bp. Consp. p. 272.—*Turdus albicollis*, Spix, Av. Bras. i. p. 71, pl. 70.

*Saturate cinnamomeo-brunneus, subtus pallide cinereus, gula alba nigro striata : ventre medio et crisso pure albis ; lateribus fulvis : tectricibus subalaribus pallide cinnamomeis : rostro corneo, mandibulæ inferioris basi flava : pedibus fuscis.*

Long. tota 8·5, alæ 4·4, caudæ 3·3.

*Hab.* South-eastern Brazil.

12. *TURDUS ASSIMILIS*.

*Turdus assimilis*, Cab. Mus. Hein. p. 4; Sclater, P. Z. S. 1857, p. 202.

*Supra olivascenti-brunneus, cauda concolore ; subtus pallide cine-*

*rascenti-olivaceus ; gula alba, nigro striata ; collo antico et ventre medio cum crisso albis : rostro omnino corneo : pedibus fuscis.*

Long tota 9·5, alæ 5·0, caudæ 4·0.

*Hab.* Southern Mexico, Vera Cruz (*Sallé*) ; Orizaba (*Botteri*) ; Puente Nacional (*Pease*) ; Oaxaca (*Boucard*).

*Mus.* P. L. S., Acad. Philadelph.

The under surface of this species much resembles that of *T. crotopezus*, showing only a larger white patch on the neck and a deeper cinereous on the breast. Above, the present bird is wholly of a paler and more cinereous brown.

### 13. *TURDUS LEUCAUCHEN.*

*Turdus leucauchen*, Sclater, P. Z. S. 1858, p. 447 ; Ibis, 1859, p. 6.

*Supra nigricanti-cinereus alis et cauda saturatioribus : capite toto et gula nigris, hac albo striata : collo antico pure albo ; abdomine toto pallide cinereo, ventre medio crissoque albis : tectricibus subalaribus pallide ochraceis : rostro flavo, pedibus pallide brunneis.*

Long. tota 9·0, alæ 4·6, caudæ 2·8.

*Hab.* Guatemala (*Skinner*).

This Guatemalan species is nearly allied to the two latter, but distinguishable by its dark cinereous colour above, more conspicuous white neck-patch and yellow bill.

### 14. *TURDUS ALBIVENTRIS.*

*Turdus albiventris*, Spix, Av. Bras. i. p. 70, pl. 69 ; Cab. in Schomb. Reisen, iii. p. 666, et Mus. Hein. p. 4 ; Burm. Syst. Ueb. iii. 124 ; Sclater, P. Z. S. 1858, p. 451.

*Brunnescenti-olivaceus, subtus pallide cinereus ; gula albida nigro striata ; ventre medio et crisso pure albis : tectricibus subalaribus pallide cinnamomeis : rostro corneo : pedibus fuscis.*

Long. tota 8·5, alæ 4·5, caudæ 3·8.

*Hab.* Guiana (*Schomb.*) and valley of the Amazon up to Rio Napo and Eastern Ecuador ; Zamora (*Fraser*) ; Brazil, Bahia, and coast-region generally ; Bolivia ?

*Mus.* Brit., P. L. S.

I am unable at present to decide that specimens collected by Mr. Fraser at Pallatanga, on the western slope of the Andes, are really referable to this species ; but they appear to be very closely allied to it.

### 15. *TURDUS IGNOBILIS.*

*Turdus ignobilis*, Sclater, P. Z. S. 1857, p. 273.

*Cinerascenti-fuscus, subtus dilutior ; gula albicante, fusco striata ; abdomine albo : tectricibus subalaribus fusco-cinereis, rufo vix tinctis : rostro corneo, pedibus fusco-nigris.*

Long. tota 9·0, alæ 4·5, caudæ 3·9.

*Hab.* Interior of New Granada.

*Mus.* P. L. S. et Acad. Philadelph.

Apparently a larger bird than the preceding, and of more uniform colouring. The colour above is darker, browner, and without any cinereous tinge; the breast is much more brown, and the throat more obsoletely streaked; the tarsi are stouter and thicker.

#### 16. *TURDUS ALBICOLLIS*.

*Turdus albicollis*, Vieill. Nouv. Diet. xx. p. 226, et Enc. Méth. p. 640; Cab. Mus. Hein. p. 5; Burm. Syst. Ueb. iii. 125.

*Cinnamomeo-brunneus, subtus pallide cinereus, gula alba nigro striata: collo antico, ventre imo et crisso albis: hypochondriis et lateribus ventris saturate cinnamomeo-rufis: rostro superiore nigro, inferiore flavo: pedibus clare fuscis.*

Long. tota 9·4, alæ 4·8, caudæ 4·0.

*Hab.* South-eastern Brazil; Paraguay and La Plata; Monte Video (*Mus. Berol.*).

*Mus.* P. L. S.

#### 17. *TURDUS AMAUROCHALINUS*.

*Turdus amaurochalinus*, Cab. Mus. Hein. p. 5.

*Supra olivaceo-viridis, præcipue in capite brunnescens: loris nigricanti-brunneis: subtus brunnescenti-griseus; gula albida fusco striata, plaga mediali immaculata: tectricibus subalaribus dilute ferrugineis: ventre medio et crisso albis: rostro adulti flavo, juvenis fusco (Cab.).*

*Hab.* Brazil.

I have not yet met with specimens of this species.

#### 18. *TURDUS GYMNOPHTHALMUS*.

*Turdus gymnophthalmus*, Cab. in Schomb. Guian. iii. p. 665.—*Turdus nudigenys*, Lafr. R. Z. 1848, p. 4.—*Turdus gymnopsis*, Temm. Mus. Lugd., et Bp. Consp. p. 272.

*Brunnescenti-olivaceus, orbitis late nudis: subtus cinerascens, gutture fusco striato, ventre medio et crisso albis: subalaribus cinnamomeis.*

Long. tota 9·0, alæ 4·5, caudæ 4·0.

*Hab.* Guiana; Venezuela; Trinidad; Tobago (*Kirk*); Surinam (*Hering* in *Mus. Acad. Philadelph.*).

*Mus.* Brit., P. L. S.

#### 19. *TURDUS FUMIGATUS*.

*Turdus fumigatus*, Licht. Doubl. p. 38.—*T. ferrugineus*, Wied, Beitr. iii. 649; Burm. Syst. Ueb. iii. 122; Bp. Consp. p. 272; Cab. in Schomb. Guian. iii. 665; Hartlaub, Journ. f. Orn. 1854, p. 260.—*Turdus olivaceus*, Lafr. et D'Orb. Syn. Av. i. p. 16, juv.?

*Rufescenti-brunneus, subtus dilutior, gula striata, subalaribus saturate cinnamomeis: rostro et pedibus fuscis. Juv. Fuscescenti-olivaceus, subtus dilutior.*

Long. tota 9·0, alæ 4·6, caudæ 3·7.

*Hab.* Eastern Brazil and northwards to Guiana; Para (*Wallace*).

*Mus.* P. L. S.



20. *TURDUS GRAYII*.

*Merula tristis*, Sw. Phil. Mag. 1827, p. 369 ?—*Turdus grayi*, Bp. P.Z.S. 1837, p. 118; Bp. Consp. p. 272; Ibis, 1859, p. 5.—*Turdus tristis*, Selater, P. Z. S. 1856, p. 294.—*Turdus helvolus*, Licht. Bp. C. R. xxxviii. p. 4; Notes Orn. p. 28.

*Supra olivascenti-fuscus: subtus flavicanti-cinnamomeus, gutture vir fusco striolato: tectricibus alarum inferioribus pallide ceruinis: rostro plumbeo, apice flavo; pedibus fuscis.*

Long. tota 9·0, alæ 5·0, caudæ 4·3.

*Hab.* Southern Mexico; Cordova (*Sallé*); Orizaba (*Botteri*).

21. *TURDUS CASIUS*.

*Planesticus casius*, Bp. Compt. Rend. xli. p. 657.

*Cinnamomeo-ferrugineus; subtus pallidior, gula obsolete striata* (Bp.).

*Hab.* In isthmo Panama (Mus. Brit.).

*Mus. Brit.*, P. L. S.

I doubt much the real distinctness of this bird from *Turdus grayii*. I have a specimen, believed to be from Guatemala, which agrees nearly with Prince Bonaparte's type in the British Museum. It only differs from the preceding in having rather smaller dimensions and paler colouring, particularly beneath. I am not acquainted with *Planesticus luridus*, Bp. (Compt. Rend. xxxviii. p. 4; Notes Orn. p. 28), said to be from New Granada; but from the characters\* assigned to it, I should imagine it to be the same as the present.

22. *TURDUS SERRANUS*.

*Turdus serranus*, Tsch. Av. Consp. in Wiegman. Arch. 1844, i. p. 280, et Faun. Per. p. 186; Cab. Journ. f. Orn. 1854, p. 260.

*Supra obscure fuscus, pilei plumarum scapis ferrugineis: remigibus rectricibusque nigricantibus: subtus ex olivaceo fuscus, pectore ferrugineo-fusco; crisso saturatiore: rostro nigro; pedibus flavis* (Tschudi).

*Hab.* Andes of Western Peru, Sierra-region, alt. 9000 to 14,000 ft. (Tsch.).

*Mus.* Novo-Castellano.

I have once had the type of this species in my hand. My impression was that it was nearly allied to *Turdus ferrugineus*; but I had no means of comparison.

23. *TURDUS FALKLANDICUS*.

*Turdus falklandicus*, Quoy & Gaim. Voy. de l'Uranie, p. 104; D'Orb. Voy. p. 202; Darwin, Voy. p. 59.—*Turdus magellanicus*, King, P. Z. S. 1830, p. 14; Bp. Consp. p. 272; Bridges, P. Z. S. 1843, p. 111.—*Merula falklandica*, Cass. U. S. Expl. Exped. Birds, p. 157.

\* Plus pâle et moins roussâtre en dessous (sc. compared with *Turdus grayii*).

*Brunneo-olivaceus, pileo nigricante : subtus dilute ochraceus, latera-liter cinerascens ; gutture albo, nigro striolato : rostro et pedibus flavis.*

Long. tota 10·5, alæ 5·4, caudæ 4·3.

*Hab.* Falkland Islands, Southern Patagonia, and Chili : Valdivia (Philippi).

*Mus.* Brit., P. L. S., Derby.

Specimens of this bird vary a little. Those in the Derby Museum from the Falklands are of a deeper rufous tinge below than continental specimens.

#### 24. *TURDUS MIGRATORIUS.*

*Turdus migratorius*, Linn. S. N. i. p. 292 ; Wils. Am. Orn. i. pl. 2 ; Aud. B. Am. iii. pl. 142 ; Bp. Consp. p. 272 ; Cassin, U. S. Expl. Exp. Birds, p. 157 ; Baird, Rep. p. 218 ; Sw. Phil. Mag. 1827, p. 368 ; Sclater, P. Z. S. 1856, p. 294.

*Cineraceus vix olivacescens : capite nigro, regione oculari alba : gula alba nigro striata : abdomine toto et tectricibus subalaribus castaneis : tibiis et crisso albis : rostro flavo, apice obscuro ; pedibus corneis.*

Long. tota 8·25, alæ 5·0, caudæ 4·0.

*Hab.* Whole continent of North America, Eastern and Western States, and down to S. Mexico in winter ; Cordova (Sallé) ; accidental in Antilles, Tobago (Kirk).

#### 25. *TURDUS NÆVIUS.*

*Turdus nævius*, Gm. S. N. i. p. 817 ; Vieill. Ois. Am. Sept. ii. pl. 66 ; Aud. B. Am. iii. pl. 143 ; Bp. Consp. p. 271 ; Baird, Rep. p. 219.

*Cineraceus : lateribus capitis et torque pectorali nigris : superciliis elongatis, fasciis alarum et corpore subtus ferrugineo-rufis : ventre medio et crisso albis rufo perfusis : caudæ rectricibus albo terminatis : rostro nigro : pedibus flavidis.*

Long. tota 9·0, alæ 5·0, caudæ 3·5.

*Hab.* Pacific Coast of N. America ; Oregon and California ; Monterey (Gambel).

The true type of Prince Bonaparte's subgeneric term *Ixoreus*, used by Professor Baird for this bird, is, as I know from its having been pointed out to me by the founder in the Jardin de Plantes' collection, the S. American *Tænioptera rufiventris* (*Tyrannus rufiventris*, Vieill. ; *Tænioptera variegata*, G. R. Gray ; D'Orb. Voy. Ois. t. 39. fig. 2 ; gen. *Myiotheretes*, Reichb.). It was from confounding this bird with the present, that the strange remark was made, which I have already alluded to (P. Z. S. 1857, p. 4), concerning the natural position of this bird, in Compt. Rendus, xxxviii. p. 3 (Notes Orn. p. 26).

#### 26. *TURDUS FULVIVENTRIS.*

*Turdus fulviventris*, Sclater, P. Z. S. 1857, p. 273.

*Nigricanti-cinereus : capite toto cum gutture nigris : cervice antica*

*cinerascens* : abdomine et subalaribus saturate cinnamomeo-rufis :  
 rostro flavo : pedibus pallide brunneis.

Long. tota 10·5, alæ 4·8, caudæ 4·0.

*Hab.* Interior of New Granada.

*Mus.* P. L. S. et Bruxelliano.

## 27. TURDUS RUFIVENTRIS.

*Turdus rufiventris*, Vieill. Nouv. Dict. xx. p. 226, et Enc. Méth. p. 639 ; Azara, no. 79 ; unde *Turdus chochi*, Vieill. Nouv. Dict. xx. p. 226, et Enc. p. 639 ; Max. Beitr. iii. 639 ; D'Orb. Voy. p. 203 ; Burm. Syst. Ueb. iii. p. 122 ; Spix, Av. Bras. i. p. 70, pl. 68 ; Bp. Consp. p. 272 ; Darw. Zool. p. 59.

*Brunnescenti-olivaceus* ; gutture albo fusco striato : abdomine cum crisso saturate ferrugineis.

Long. tota 9·5, alæ 4·6, caudæ 4·0.

*Hab.* South-eastern Brazil ; Paraguay (*Azar.*) ; interior of Bolivia and Argentine republic down to Rio Negro (*D'Orb.*).

*Mus.* Brit., P.L.S., &c.

## 28. TURDUS FLAVIROSTRIS.

*Turdus flavirostris*, Sw. Phil. Mag. 1827, p. 369.—*Turdus rufo-palliatus*, Lafr. Rev. Zool. 1840, p. 259.—*Turdus palliatus*, Bp. Consp. p. 272.

*Cinereo-olivaceus*, dorso et abdomine rufo-cinnamomeis ; ventre medio et crisso albis : gula alba, nigro striata : rostro et pedibus flavis.  
 ♀ dorso dilutiore.

Long. tota 5·5, alæ 4·9, caudæ 3·75.

*Hab.* Western Mexico and Lower California ; Monterey (*Lafr.*).

*Mus.* Brit.

### γ. *Semimerula*.

*Majores* : *ptilosis unicolor*, fusca aut fusco-nigra : sexus similes.

## 29. TURDUS GIGAS.

*Turdus gigas*, Fraser, P. Z. S. 1840, p. 59 ; Bp. Consp. p. 275 ; Selater, P. Z. S. 1855, p. 144 ; 1858, pp. 451 & 550.

*Nigricanti-fuscus*, subtus dilutior : rostro et pedibus flavis.

Long. tota 13·0, alæ 6·0, caudæ 6·0, tarsi 1·7.

*Hab.* Interior of New Granada and Ecuador ; Cuenca, and plateau of Riobamba (*Fraser*).

*Mus.* Brit., P. L. S.

Easily distinguishable from the next-following species by its larger dimensions. The colouring is also lighter and more greyish below.

## 30. TURDUS FUSCATER.

*Turdus fuscater*, Lafr. et D'Orb. Syn. Av. i. p. 16 ; D'Orb. Voy. p. 200, pl. 9. f. 1 ; Bp. Consp. p. 275 ; Gay, Hist. de Chili, Zool. p. 331 ; Fraser in P. Z. S. 1843, p. 120 ; Tschudi, Faun. Per. p. 186.

*Fuliginoso-nigricans*: rostro et pedibus flavis.

Long. tota 10·5, alæ 5·9, caudæ 4·5, tarsi 1·45.

*Hab.* Andes of Peru and Bolivia; Cochabamba and Chuquisaca (D'Orb.); Mendoza in Argentine republic (Bridges and Burmeister).

*Mus.* Brit., P. L. S.

### 31. *TURDUS CHIGUANCO.*

*Turdus chiguanco*, Lafr. et D'Orb. Syn. Av. p. 16; D'Orb. Voy. p. 201, pl. 9. fig. 2; Bp. Consp. p. 275; Selater, P. Z. S. 1858, pp. 450 & 540.

*Fuliginoso-cinereus, subtus dilutior; gula albicante: tectricibus subalaribus rufis: rostro et pedibus flavis.*

Long. tota 10·0, alæ 5·3, caudæ 4·4.

*Hab.* Andes of Peru and Ecuador—Tacna (D'Orb.); Cuenca and plateau of Rio Bamba (Fraser).

*Mus.* Paris., P. L. S.

### 32. *TURDUS AURANTIUS.*

*Turdus aurantius*, Gm. S.N. i. p. 832; Bp. Consp. p. 275.—*Turdus leucogenys*, Lath. Ind. Orn. i. p. 341.—*Merula leucogenys*, Gosse, B. Jam. p. 136, et Ill. no. 23.

*Nigricanti-cinereus, subtus dilutior; mento, abdomine medio et macula alari albis: rostro aurantiaco, pedibus flavis.*

Long. tota 9·0, alæ 4·6, caudæ 3·6.

*Hab.* Jamaica.

*Mus.* Brit., P. L. S.

### 33. *TURDUS OLIVATER.*

*Merula olivatra*, Lafr. Rev. Zool. 1848, p. 2.

*Olivascenti-brunneus, subtus dilutior; ventre medio præcipue pallidiore: alis caudaque intus nigricantibus: capite et collo toto undique ad medium pectus nigerrimis: tectricibus subalaribus ventre concoloribus; rostro et pedibus flavis.*

Long. tota 9·0, alæ 4·6, caudæ 3·7.

*Hab.* Venezuela, between La Guayra and Caraccas (Sallé).

*Mus.* Derbiano, Bremensi.

#### δ. *Merula.*

*Sexus inter se dissimilis: mares nigri aut nigro varii: fæminæ fusæ aut fuscæ.*

### 34. *TURDUS ATROSERICEUS.*

*Merula atrosericea*, Lafr. R. Z. 1848, p. 3.

*Turdus atrosericeus*, Selater, P. Z. S. 1859, p. 136.

*Atrosericeus, rostro et pedibus flavis: ♀ brunnescenti-olivacea, rostro et pedibus fuscis.*

Long. tota 9·0, alæ 4·7, caudæ 4·0.

*Hab.* Venezuela, New Granada, and Ecuador; Pallatanga (Fraser).

*Mus.* P. L. S.



35. *TURDUS INFUSCATUS*.

*Merula infuscata*, Lafr. Rev. Zool. 1844, p. 41.—*Turdus infuscatus*, Sclater et Salvin, Ibis, 1859, p. 6; Bp. Consp. p. 275.

*Obscure niger : rostro et pedibus flavis.* ♀ *brunnescenti-olivacea, subtus dilutior, gutture striato; tectricibus subalaribus rufis : rostro fusceo : pedibus flavis.*

Long. tota 9·5, alæ 5·0, caudæ 3·75.

*Hab.* Southern Mexico and Guatemala; Jalapa (*de Oca*); Oaxaca (*Boucard*).

*Mus.* P. L. S.

This Blackbird seems truly different from the preceding, as I judge from the examination of several specimens. It is not of so deep a black; the bill is much shorter (0·9 inch from the gape instead of 1·3); the wings are longer and more pointed, and the tarsi are shorter.

36. *TURDUS XANTHOSCELES*.

*Turdus xanthosceles*, Jard. Contr. Orn. 1847, p. 14, pl. 1, et Ann. N. H. xx. p. 329 (1847); Bp. Consp. p. 275.

*Niger : rostro et pedibus flavis.* ♀ *fusco-olivacea.*

Long. tota 8·0, alæ 4·3, caudæ 3·5.

*Hab.* Tobago (*Kirk*).

*Mus.* Gul. Jardine, Bart., et P. L. S.

37. *TURDUS FLAVIPES*.

*Turdus flavipes*, Vieill. Nouv. Dict. xx. 277; Enc. Méth. p. 670; Spix, Av. Bras. i. pl. 67. f. 2, p. 69.—*Turdus carbonarius*, Licht. Doubl. p. 37; Max. Beitr. iii. p. 643; Burm. Syst. Ueb. iii. p. 125.

*Niger : dorso toto et ventre imo et laterali schistaceis : rostro et pedibus flavis.* ♀ *olivaceo-brunnea, subtus dilutior, rostro et pedibus fuscis.*

Long. tota 9·0, alæ 4·5, caudæ 3·5.

*Hab.* S. E. Brazil.

*Mus.* Brit., P. L. S.

38. *TURDUS RUFITORQUES*.

*Turdus rufitorques*, Hartl. R. Z. 1844, p. 214; DuBus, Esq. Orn. pl. 19 & 20; Bp. Consp. p. 275; Sclat. et Salv. Ibis, 1849, p. 6.

*Nigro-fuliginosus, mento albo; cervice undique et pectore rufocinnamomeis : rostro flavo.* ♀ *fusco-brunnea, gula striata, pectore et collo postico rufo tinctis.*

Long. tota 9·5, alæ 5·0, caudæ 4·0.

*Hab.* Guatemala (*Salvin*).

*Mus.* Derbiano, Brit., P. L. S.

39. *TURDUS PINICOLA*, sp. nov.

*Fusco-niger, capitis et dorsi plumarum scapis brunneis : alarum tectricibus majoribus fumido-albo extus late limbatis : prima-*

*riorum parte basali extus et intus macula magna alba occupata : secundariorum apicibus grisescenti-albo late terminatis : cauda nigra, hujus tectricibus superioribus et rectricum apicibus albis : abdomine cum crisso et tectricibus alarum inferioribus albis : rostro nigro, pedibus flavis. ♀ brunnescentior : coloribus dilutioribus ; gutture et pectore toto brunneis, colore pallidiore marmoratis.*

Long. tota 8·28, alæ 5·0, caudæ 3·28, tarsi 1·0.

*Hab.* Southern Mexico, Pine-forests of the tableland above Jalapa (*de Oca*).

*Mus.* Bremensi et P.L.S.

### Genus III. CICHLERMINIA.

*Cichlerminia*, Bp. Compt. Rend. xxxviii. p. 3 (1854).

#### 1. CICHLERMINIA BONAPARTII.

*Turdus herminieri*, Lafr. R. Z. 1844, p. 167.

*Saturate brunnea, plumis abdominis albis brunneo marginatis, tanquam squamatis : oculorum ambitu denudato.*

Long. tota 8·5, alæ 5·0, caudæ 3·5, tarsi 1·65.

*Hab.* Island of Guadeloupe (*L'Herminier*).

*Mus.* Brit.

This is a singular bird, and must be separated from the three following species, differing as it does in its much stronger bill and longer tarsi, which give it somewhat the semblance of an Ant-thrush (*Grallaria*).

### Genus IV. MARGAROPS.

*Cichlalopia*, Bp. Rev. Zool. 1857, p. 205, nec Bp. Compt. Rend. xxxviii. p. 6 (1854).

#### 1. MARGAROPS FUSCATUS.

*Turdus fuscatus*, Vieill. Ois. de l'Am. Sept. ii. p. 1, pl. 57 *bis* ; Nouv. Dict. xx. p. 226, et Enc. Méth. p. 639 ; Bp. Consp. p. 276 ; *Cichlerminia fuscata*, A. & E. Newton, Ibis, 1859, p. 141.—*Colluricincla fusca*, Gould, P. Z. S. 1836, p. 6.

*Fusco-brunneus, plumis colore dilutius marginatis : subtus albo variegatus : ventre crissoque albis fusco striatis : caudæ rectricibus lateralibus albo terminatis : rostro et pedibus corneis.*

Long. tota 10·5, alæ 5·0, caudæ 4·25, tarsi 1·3.

*Hab.* Islands S. Domingo and Porto Rico (*Vieill.*) ; St. Croix et St. Thomas (*Newton*).

Messrs. Newton have described the nest and eggs of this bird in the 'Ibis' (1859, p. 142).

Not being able to concur in Prince Bonaparte's transfer of his name *Cichlalopia* to this genus, I have used the term *Margarops* (μάργαρος et ὦψ)—sc. "Pearly-eyed Thrush," as Messrs. Newton call it.

## 2. MARGAROPS DENSIROSTRIS.

*Turdus densirostris*, Vieill. Nouv. Dict. xx. p. 233, et Enc. Méth. p. 642; Bp. Consp. p. 271; Lafr. R. Z. 1844, p. 167.

*Similis præcedenti, sed paulo minor; rostro brevior, et magis crasso: tarsi brevioribus, validioribus: pectore magis striato.*

*Hab.* Island of Guadeloupe (*L'Herminier*); Martinique (*Vieill.*).  
*Mus.* Brit.

## 3. MARGAROPS MONTANUS.

*Turdus montanus*, Lafr. R. Z. 1844, p. 167.

*Præcedentibus minor, supra unicolor fuscus; secundariis, tectricibus alarum majoribus et cauda albo terminatis: gutturi totius et pectoris plumis nigro-brunnescentibus, albo vix marginatis: ventre imo albido.*

Long. tota 9·0, alæ 4·9, caudæ 3·8.

*Hab.* Island of Guadeloupe (*L'Herm.*).

*Mus.* Brit.

## Genus V. GALEOSOPTES.

*Galeoscoptes*, Cab. Mus. Hein. p. 82 (1851).

*Felivox*, Bp. Compt. Rend. xxxviii. p. 56 (1854).

a. *Galeoscoptes*.

## 1. GALEOSOPTES CAROLINENSIS.

*Muscicapa carolinensis*, Linn. S. N. i. p. 328.—*Turdus felivox*, Vieill.—*Turdus lividus*, Wils. Am. Orn. pl. 14. f. 3.—*Mimus carolinensis*, Baird, Report, p. 346; Sclater, P.Z.S. 1856, p. 294; Cab. Mus. Hein. 1855, p. 470; Ibis, 1859, p. 6.

*Plumbeus, subtus dilutior, pileo nigro; crisso ferrugineo: rostro nigro, pedibus pallide brunneis.*

Long. tota 8·0, alæ 3·5, caudæ 3·5.

*Hab.* Eastern N. America down to Mexico, Guatemala, and Honduras (in winter); Cordova (*Sallé*); Belize (*Salvin*); Cuba (*Gundlach*).

*Mus.* Brit., P. L. S.

β. *Mimocichla*.

## 2. GALEOSOPTES RUBRIPES.

*Turdus rubripes*, Temm. Pl. Col. 409; La Sagra, Cuba Ois. pl. 4.—*Mimus rubripes*, Bp. Consp. p. 276.—*Galeoscoptes rubripes*, Cab. Mus. Hein. p. 82, et Journ. f. Orn. 1855, p. 470.

*Dilute plumbeus, mento et crisso albis: gutture toto nigro: ventre rubro: rostro nigricante, pedibus aurantiacis.*

Long. tota 10·0, alæ 4·6, caudæ 3·3.

*Hab.* Cuba.

*Mus.* Brit., P. L. S.

## 3. GALEOSOPTES PLUMBEUS.

*Turdus plumbeus*, Linn. S. N. i. p. 294; Pl. Enl. 560. f. 1; Vieill. Ois. de l'Am. Sept. ii. pl. 58, p. 2. — *Turdus ardosiaecus*, Vieill. Enc. Méth. p. 646. — *Galeoscoptes plumbeus*, Cab. Mus. Hein. p. 82; Sallé, P. Z. S. 1857, p. 231.

*Cinereus: lateribus capitis nigris: gula alba nigro striata: ventre imo et crisso albis: cauda nigra, albo terminata.*

Long. tota 10·5, alæ 5·1, caudæ 4·5.

*Hab.* S. Domingo (Sallé); Porto Rico (*Maugé* in Mus. Par.).

*Mus.* Brit., P. L. S.

## Genus VI. MELANOPTILA.

*Melanoptila*, Sclater, P. Z. S. 1857, p. 275.

## 1. MELANOPTILA GLABRIROSTRIS.

*Melanoptila glabrirostris*, Sclater, P. Z. S. 1857, p. 275.

*Nigra unicolor, cæruleo-nitens: alis caudaque æneo magis splendentibus: rostro et pedibus nigris.*

Long. tota 7·8, alæ 3·5, caudæ 4·3.

*Hab.* Honduras, vicinity of Omoa.

*Mus.* Derbiano, Brit., P. L. S.

## Genus VII. MELANOTIS.

*Melanotis*, Bp. Consp. i. p. 276 (1850).

## 1. MELANOTIS CÆRULESCENS.

*Orpheus cærulescens*, Sw. Phil. Mag. 1827, p. 369. — *Turdus melanotis*, Temm. Pl. Col. 498; Sclater, P. Z. S. 1856, p. 294; Bp. Consp. p. 276.

*Schistaceo-cærulescens, facie nigra, rostro et pedibus nigris.*

Long. tota 10·0, alæ 4·5, caudæ 4·7.

*Hab.* Southern Mexico; Cordova (*Salle*).

*Mus.* Brit., P. L. S.

## 2. MELANOTIS HYPOLEUCUS.

*Melanotis hypoleucus*, Hartl. Rev. Zool. 1851, p. 460; Scl. et Salv. Ibis, 1859, p. 7.

*Schistaceo-cærulescens, lateribus capitis nigris: subtus candidus, crisso obscure cæruleo: rostro et pedibus nigris.*

Long. tota 10·0, alæ 4·3, caudæ 5·0.

*Hab.* Guatemala, central region (*Salvin*).

*Mus.* Brit., P. L. S.

## Genus VIII. RHAMPHOCINCLUS.

*Ramphocinclus*, Lafr. R. Z. 1843, p. 66.

*Legriocinclus*, Less. Ann. Sc. Nat. ix. p. 168 (1839).

*Cinclops*, Bp. Compt. Rend. xxxviii. p. 1.

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## 1. RHAMPHOCINCLUS BRACHYURUS.

*Turdus brachyurus*, Vieill. Nouv. Dict. xx. p. 255, et Enc. Méth. p. 655; Lafr. Rev. Zool. 1143, p. 66; Sclater, P.Z.S. 1855, p. 213.—*Zoothera cincllops*, Bp. Consp. p. 259.—*Cincllops melanoleucus*, Bp.

*Nigricanti-fuscus*: lateribus capitis nigris: subtus albus, hypochondriis et crisso dorso concoloribus: rostro nigro, pedibus fusco-nigris.

Long. tota 8·0, alæ 3·9, caudæ 3·0.

*Hab.* Islands of St. Lucia and Guadeloupe (*Mus. Paris.*); Martinique (*Vieill.*).

*Mus.* Paris., P. L. S.

## Genus IX. CINCLOCERTHIA.

*Stenorhynchus*, Gould, P. Z. S. 1835, p. 186.

*Cinclocerthia*, G. R. Gray, List. of Gen. 1840, p. 22.

*Hermioneris*, Less. Rev. Zool. 1843, p. 325.

## 1. CINCLOCERTHIA RUFICAUDA.

*Stenorhynchus ruficaudus*, Gould, P. Z. S. 1835, p. 186.—*Cinclocerthia ruficauda*, G. R. Gray.—*Ramphocinclus tremulus*, Lafr. Rev. Zool. 1833, p. 67; Sclater, P. Z. S. 1855, p. 214.

*Fumoso-brunnea unicolor*, paulum rufescens: subtus paulo dilutior magis cinerascens: rostro nigro, basi brunnescente; pedibus fuscis.

Long. tota 9·5, alæ 4·0, caudæ 3·4, rostri a rictu 1·7.

*Hab.* Island of Guadeloupe (*Lafr.*), Nevis (*Gould*).

*Mus.* Brit., P. L. S.

## 2. CINCLOCERTHIA GUTTURALIS.

*Ramphocinclus gutturalis*, Lafr. Rev. Zool. 1843, p. 67; Sclater, P. Z. S. 1855, p. 214.

*Nigricanti-fuscocinerea*, subtus valde dilutior: gutture et ventre medio albis: tectricibus subalaribus pallide fusco-cinerascens.

Long. tota 9·5, alæ 4·4, caudæ 3·2, tarsi 1·2, rostri a rictu 1·5.

*Hab.* Island of Martinique (*Mus. Brit.*).

*Mus.* Brit.

## Genus X. HARPORHYNCHUS.

*Harpes*, Gamb. Pr. Ac. Phil. ii. p. 264.

*Harporrhynchus*, Cab. Wieg. Arch. 1848, i. p. 98.

*Toxostoma*, Wagl. Isis, 1831, p. 528.

*Methriopterus*, Reichb. Av. S. N. pl. 55.

a. *Harporhynchus*.✓ 1. *HARPORHYNCHUS REDIVIVUS*.

*Harpes redivivus*, Gamb. Pr. Ac. Phil. ii. p. 264. — *Toxostoma rediviva*, Gamb. Journ. Ac. Phil. i. p. 42 (1847); Bp. Consp. p. 277; Cassin, B. Californ. pl. 43. — *Harporhynchus redivivus*, Cab. Wiegman. Arch. 1848, p. 98; Baird, Rep. p. 349.

*Supra brunnescenti-olivaceus: infra pallide cinnamomeus, gula pallidiore, ventre imo et crisso saturatoribus; pectore antico et lateribus brunnescenti-olivaceis, dorso pallidioribus: superciliis et linea infra-oculari, hac obsoletiore, obscure cineraceis: regione auriculari et striga maxillari indistincta obscure fuscis; caudæ apice pallidiore.*

Long. tota 11·5, alæ 4·2, caudæ 5·75.

*Hab.* California.

*Mus.* Brit.

✓ 2. *HARPORHYNCHUS LECONTII*.

*Toxostoma lecontii*, Lawr. Ann. Lyc. N. Y. v. p. 109. — *Harporhynchus lecontii*, Bp. Compt. Rend. xxviii. p. 57; Notes Orn. p. 39; Baird, Rep. p. 350.

*Assimilis præcedenti, sed crassitie inferiore et coloribus dilutioribus.*

*Hab.* Vicinity of Fort Yuma, Gila River, California.

*Mus.* Institut. Smithsonian.

✓ 3. *HARPORHYNCHUS CRISSALIS*.

*Toxostoma crissalis*, Henry, Pr. Acad. Philad. 1858, p. 117; Baird, Rep. p. 351.

*Supra olivaceo-brunneus, grisescente tinctus: infra pallidior, brunnescenti-griseus, gula albicantiore: crisso ferrugineo.*

Long. tota 11·0, alæ 4·0, caudæ 5·8.

*Hab.* Southern Rocky Mountains.

*Mus.* Institut. Smithsonian.

✓ 4. *HARPORHYNCHUS CURVIROSTRIS*.

*Orpheus curvirostris*, Sw. Phil. Mag. 1827, p. 369. — *Pomatorhinus turdinus*, Temm. Pl. Col. 441. — *Toxostoma vetula*, Wagler, Isis, 1831, p. 528; Baird, Report, p. 351. — *Toxostoma curvirostre*, Sclater, P. Z. S. 1857, p. 212.

*Cinereus, alarum tetricibus anguste albo terminatis; subtus albus, pectore cinereo variegato: caudæ rectricibus extimis in pogonio interiore albo terminatis: rostro et pedibus nigris.*

Long. tota 9·5, alæ 4·3, caudæ 4·4.

*Hab.* Southern Mexico; Orizaba (*Botteri*).

*Mus.* P. L. S.

β. *Methriopterus*.✓ 5. *HARPORHYNCHUS LONGIROSTRIS*.

*Orpheus longirostris*, Lafr. Rev. Zool. 1838, p. 55, et Mag. de

Zool. 1839, Ois. pl. 1 ; Baird, Rep. p. 352.—*Mimus longirostris*, Selater, P. Z. S. 1856, p. 294.

*Sordide castaneus: alarum tectricum apicibus albis, macula subapicali nigricante: subtus albus, nigro longitudinaliter striatus, gula et abdomine medio immaculatis.*

Long. tota 11·0, alæ 4·0, caudæ 5·3.

*Hab.* Eastern Mexico ; Rio Grande (*Couch*) ; Cordova (*Sallé*).

*Mus.* Brit., P. L. S.

#### 6. HARPORHYNCHUS RUFUS.

*Turdus rufus*, Linn. S. N. i. p. 293 ; Wils. Am. Orn. ii. pl. 14.—*Orpheus rufus*, Sw.—*Harporhynchus rufus*, Cab. Mus. Hein. p. 82 ; Baird, Report, p. 353.

*Supra læte castaneus, alarum tectricum apicibus albis, macula subapicali nigricante: subtus albus brunnescenti-nigro triangulariter notatus: gula et abdomine medio immaculatis: rostro brevior et mandibula inferiore recta: rostro nigricanti-fusco, pedibus corneis.*

Long. tota 11·0, alæ 4·0, caudæ 5·0.

*Hab.* Eastern N. America.

### Genus XI. OREOSOPTES.

*Oreosptes*, Baird, Report N. A. Orn. p. 346.

#### 1. OREOSOPTES MONTANUS.

*Oreosptes montanus*, Baird, Rep. p. 347.—*Orpheus montanus*, Townsh. Journ. Ac. Philad. vii. 2. p. 192 ; Aud. B. Am. pl. 139.—*Mimus montanus*, Bp. Consp. p. 276.

*Supra fusco-cineraceus, subtus albus, maculis parvis triangularibus, nisi in gula et ventre medio notatus: alarum tectricibus et remigibus albo anguste marginatis: rectricibus lateralibus albo terminatis: rostro nigro, pedibus corneis.*

Long. tota 8·5, alæ 3·8, caudæ 3·5.

*Hab.* Rocky Mountains southwards to Mexico, and Gila Valley to California.

*Mus.* Bremensi et P. L. S.

### Genus XII. MIMUS.

*Mimus*, Boie, Isis, 1826, p. 972.

*Orpheus*, Sw. Zool. Journ. (1827) iii. p. 167.

#### *α. Species rectrice extima omnino alba.*

#### 1. MIMUS POLYGLOTTUS.

*Turdus polyglottus*, Linn. S. N. i. p. 293 ; Wils. Am. Orn. ii. pl. 10. f. 1.—*Mimus polyglottus*, Bp. Consp. p. 276 ; Baird, Report, p. 344 ;

Slater, P. Z. S. 1856, p. 212 ; Cab. Journ. f. Orn. 1855, p. 470.—*Orpheus polyglottus*, Sw.

*Nigricanti-cinereus, subtus albus : alis nigris, cinerascete limbatis, tectricum et secundariorum apicibus cum speculo magno alari, primariorum basin et alulam spuriam occupante, albis : cauda nigra albo terminata : rectrice extima tota, secundæ pogonio interno, et tertiæ parte mediali albis.*

Long. tota 9·5, alæ 4·7, caudæ 5·0.

*Hab.* North America, eastern and western (?) ; southwards to Mexico, Cordova (*Sallé*) ; Orizaba (*Botteri*) ; Cuba (*Gundlach*).

*Mus.* Brit., P. L. S.

## 2. MIMUS ORPHEUS.

*Mimus*, Briss. Orn. ii. p. 263.—*Turdus orpheus*, Linn. ; Edwards, Birds, pl. 28 ; Vieill. Ois. de l'Am. Sept. ii. p. 12, pl. 68 ; Gosse, B. Jamaica, p. 144.

*Albicanti-cinereus, subtus albus : alis nigris cinerascete limbatis, tectricum et secundariorum apicibus cum speculo magno alari albis : cauda nigra albo terminata : rectricibus duabus extimis fere omnino et sequentibus duabus ex majore parte albis.*

Long. tota 9·0, alæ 4·0, caudæ 4·3.

*Hab.* Jamaica.

*Mus.* P. L. S.

Distinguishable from *M. polyglottus* by its smaller size, and the greater extension of the white on the outer tail-feathers.

## 3. MIMUS DOMINICUS.

*Merula dominicensis*, Briss. Orn. ii. p. 284.—*Turdus dominicus*, Linn. i. p. 295 ; *Sallé*, P. Z. S. 1857, p. 232.

*Similis præcedenti et forsan ab illo vix distinctus.*

*Hab.* S. Domingo.

## 4. MIMUS TRIURUS.

*Calandria tres colas*, Azara, no. 224, unde *Turdus triurus*, Vieill. Nouv. Dict. xx. p. 276, et Enc. p. 668.—*Orpheus tricaudatus*, Lafr. et d'Orb. Syn. i. p. 18 ; d'Orb. Voy. p. 208 ; Bridges, P. Z. S. 1843, p. 120 ; Bp. Consp. p. 277.

*Fusco-cinereus, uropygio rufescente, subtus albus : alis nigris, tectricibus majoribus et secundariis (nisi tribus dorso proximis) omnino albis : cauda nigra, rectricibus duabus extimis omnino albis, sequentibus duabus albo variegatis.*

Long. tota 8·5, alæ 3·9, caudæ 4·0.

*Hab.* Paraguay (*Az.*) ; Bolivia, Chiquitos (*d'Orb.*) ; rep. Argentin., Mendoza (*Bridges*).

*Mus.* Brit., Derbyano, P. L. S.

## 5. MIMUS DORSALIS.

*Orpheus dorsalis*, Lafr. et d'Orb. Syn. Av. i. p. 18 ; d'Orb. Voy. p. 211, pl. 11. f. 2 ; Bp. Consp. p. 277.



*Saturate fuscescenti-rufus, superciliis albis : subtus albus : alis nigris, speculo alari magno et tectricum secundariorumque marginibus angustis albis : caudæ rectricibus tribus extimis omnino albis, duabus sequentibus albo variis, ceteris nigris.*

Long. tota 10·0, alæ 4·9, caudæ 4·9.

*Hab.* Interior of Bolivia ; prov. Cochabamba (*d' Orb.*).

*Mus. Brit., P. L. S.*

β. *Species rectricis extimæ parte basali nigra.*

a. *Supra unicolores.*

6. *MIMUS LIVIDUS.*

*Turdus lividus*, Licht. Doubl. p. 39.—*Turdus orpheus*, Spix, Av. Bras. i. p. 71, pl. 71.—*Mimus lividus*, Max. Beitr. iii. p. 653 ; Burm. Syst. Ueb. iii. p. 128.

*Supra pallide cinereus, superciliis et corpore subtus albis ; hypochondriis nigricante striatis : regione auriculari obscura : alis nigricantibus, albo anguste marginatis : rectricibus nigris, apicibus angustis albis.*

Long. tota 10·5, alæ 4·5, caudæ 5·1.

*Hab.* S.E. Brasil.

*Mus. P. L. S.*

7. *MIMUS GUNDLACHII.*

*Mimus gundlachii*, Cab. Journ. f. Orn. 1855, p. 470.

*Similis Mimo livido, sed caudæ rectricum apicibus albis angustioribus, rostro longiore, et corpore subtus magis puro.*

*Hab.* In ins. Cuba (*Gundlach*). (*Non vidi.*)

8. *MIMUS GILVUS.*

*Turdus gilvus*, Vieill. Ois. de l'Am. Sept. ii. p. 15. pl. 68 bis ; Nouv. Dict. xx. p. 296 ; Enc. Méth. p. 678.

*Supra fuscescenti-cinereus, superciliis et corpore subtus albis : regione auriculari paulo obscuriore : alis nigricantibus, tectricibus albo terminatis, remigibus cinereo stricte marginatis : cauda nigricante, rectricum apicibus latis albis.*

Long. tota 10, alæ 4·5, caudæ 4·5.

*Hab.* British Guiana (*Schomb.*).

*Mus. Brit., P. L. S.*

*Obs.* Affinis *Mimo livido*, sed supra fuscescens cinereus et rectricum apicibus albis latioribus.

9. *MIMUS MELANOPTERUS.*

*Mimus melanopterus*, Lawr. Ann. Lyc. N. Y. 1845, p. 35. pl. 2.—*Mimus colombianus*, Cab. Mus. Hein. p. 82.—*Mimus* — ? , Selater, P. Z. S. 1855, p. 145.—*Mimus gilvus*, Jard. Ann. N. H. ser. 2. xx. p. 329.

*Cano-cinereus : subtus albus : superciliis albis, regione oculari nigricante : alis nigricantibus, tectricibus albo terminatis, re-*

*migibus cinereo stricte limbatis: cauda nigricante, rectricum apicibus latis albis.*

Long. tota 9·5, alæ 4·4, caudæ 5·0.

*Hab.* New Granada; Venezuela; Trinidad; Tobago (*Kirk*).

*Mus.* P. L. S.

*Obs.* A *Mimo gilvo*, crassitie inferiore, rostro paulo longiore et rectricum apicibus albis minus latis vix distinguendus.

#### 10. MIMUS GRACILIS.

*Mimus gracilis*, Cab. Mus. Hein. p. 83; Sclater et Salv. Ibis, 1859, p. 5.

*Cano-cinereus; subtus albus, alis et cauda nigerrimis: tectricum apicibus angustis albis; remigibus strictissime cinereo marginatis; rectricum apicibus latioribus et unæ utrinque extimæ pogonio interiore a basi albis.*

Long. tota 9·3, alæ 4·2, caudæ 5·0.

*Hab.* Guatemala and Honduras (*Salvin*).

*Mus.* P. L. S.

*Obs.* Alis et cauda coracino-nigris primo visu distinctus.

#### b. *Supra nigro variegatæ.*

#### 11. MIMUS MODULATOR.

*Mimus modulator*, Gould, P. Z. S. 1836, p. 6.

*Supra cinerascens-brunneus nigro flammulatus, uropygio rufescente: superciliis latis et longis albis: alis nigricantibus, albo et rufescenti-griseo extus marginatis: cauda nigra, rectricum lateralium tertia parte apicali alba: subtus albus, ventre et lateribus rufescente perfusis.*

Long. tota 11·0, alæ 4·5, caudæ 5·0, rostri a rictu 1·1.

*Hab.* Southern Brazil, Rio Grande (*Plant*); Maldonado (*Darw.*).

*Mus.* Brit., P. L. S.

*Obs.* Species crassitie majore et rostro brevi insignis, et facile distinguenda.

#### 12. MIMUS CALANDRIA.

*Calandria*, Azara, no. 223.—*Orpheus calandria*, Lafr. et d'Orb. Syn. Av. i. p. 17; d'Orb. Voy. p. 206. pl. 10. f. 2.—*Mimus orpheus*, Darwin, Zool. Beagle, p. 60; Burm. Syst. Ueb. iii. p. 126?

*Supra fusco-fuliginosus, plumis in disco obscurioribus, alarum tectricum et secundariorum apicibus sordide albescentibus; primariis angustissime albo marginatis: flexura alba: superciliis latis et corpore subtus sordide albescentibus: cauda fusco-nigra, rectricibus quatuor extimis late albo terminatis (d'Orb.).*

*Hab.* Paraguay; La Plata, near Monte Video, and Buenos Ayres (*d'Orb.*).

*Obs.* Minor quam *M. thenca* (teste d'Orbigny), itaque cum *Mimo modulatore*, Gouldii, majore minime confundendus!

Burmeister and other writers unite this species to *M. modulator*, which is certainly wrong. I have a Bolivian bird (agreeing with two specimens in the British Museum from the same country, collected

by Bridges) which I am inclined to refer to it. My example is very like *M. modulator*, but much smaller (Long. tota 9·5, alæ 4·0, caudæ 4·2), though the bill is of the same size.

### 13. MIMUS PATAGONICUS.

*Orpheus patagonicus*, Lafr. et d'Orb. Syn. Av. i. p. 16; d'Orb. Voy. p. 210, pl. 11. f. 2; Darwin, Voy. Beagle, p. 60.

*Fusco-cinereus superciliis angustis albicantibus; tergo parum rufescente: alis nigris, primariis anguste, secundariis et tectricibus late albo marginatis: rectricibus nigris, harum lateralibus macula cuneiformi alba terminatis: subtus cinerascens, gula et abdomine medio albis: hypochondriis rufescentibus fusco striolatis: gutture albo, maculis minutis fuscis utrinque marginato.*

*Hab.* Patagonia; Rio Negro (*d'Orb.* and *Darwin*).

*Mus.* Brit.

### 14. MIMUS THENCA.

*Turdus thenca*, Molina, Saggio S. N. Chili, p. 213. — *Orpheus thenca*, d'Orb. Voy. p. 209. — *Mimus thenca*, Darw. Zool. Beagle, p. 61.

*Supra fuscus, nigro paulum variegatus, pileo obscuriore: superciliis latis albis: alis nigris albo limbatis: subtus sordide cinereus, striga gulari utrinque nigricante: hypochondriis nigro flammulatis: cauda nigra: rectricum lateralium apicibus albis.*

Long. tota 10, alæ 4·5, caudæ 4·8.

*Hab.* Chile, near Valparaiso (*d'Orb.*); sea-coast of Central and Northern Chile (*Darwin*).

*Mus.* Brit., P. L. S.

*Obs.* Gula utrinque striata conspicuus.

### 15. MIMUS LEUCOSPILUS.

*Mimus leucospilus*, v. Pelzeln, Sitz. Ak. Wien, xxxi. p. 323. — *Mimus peruvianus*, Peale, B. of U. S. Expl. Exp. ed. 1. p. 87?

*Sordide cinereus, plumis medialiter nigricantioribus, cinereo circumcinctis: lateribus capitis cervice et corpore subtus albis; pectore cinereo lavato; lateribus nigro striatis: alis nigricantibus brunneis extus albo limbatis: tectricibus dorso concoloribus sed albo limbatis, tectricum primariorum apicibus omnino albis maculam alarem conspicuam constituentibus: cauda supra nigricanti-cinerea, subtus pallidiore, rectricibus omnibus nisi duabus intermediis albo late terminatis; rectricibus duabus extimis item in utroque pogonio anguste albo marginatis: tectricibus alarum inferioribus albis: rostro et pedibus nigris.*

Long. tota 10·5, alæ 4·8, caudæ 5·5.

*Hab.* Coast of Ecuador, Bay of S. Elena (*Kellett*).

*Mus.* Brit., Vindobiensi.

### 16. MIMUS SATURNINUS.

*Mimus saturninus*, Licht. Doubl. p. 39; Max. Beitr. iii. 658; Burm. Syst. Ueb. iii. 127.

*Fusco-cinereus, plumis medialiter nigricantioribus; subtus sordide albido-cinereascens, hypochondriis rufescentibus fusco striolatis: vitta lata superciliari albicante, regione auriculari nigra: remigibus totis fuscis, albido marginatis: rectricibus fusco-nigricantibus, albo late terminatis.*

Long. tota 9·5, alæ 1·1, caudæ 4·7, rostri a rictu 1·05.

*Hab.* Coast-region of Brazil; Para (*Licht.*).

*Mus.* Brit., P. L. S.

#### 17. MIMUS LONGICAUDATUS.

*Mimus longicaudatus*, Tsch. in Wiegmann, Arch. 1844, i. p. 280; Faun. Per. p. 190, pl. 15. f. 2.

*Supra cinereo-fuscus, alis saturatioribus albo-vittatis; cauda longa, fusca, apice alba: subtus albicans, pectore dorso concolore: rostro nigro: pedibus fuscis.* (Tsch.)

*Hab.* Wood-region of E. Peru (Tsch.).

I have not seen this species. Tschudi says it resembles *M. thenca* in colouring, but differs in its longer, more compressed, and more incurved bill.

#### 18. MIMUS TRIFASCIATUS.

*Orpheus trifasciatus*, Gould, P. Z. S. 1837, p. 27; Darwin, Voy. Beagle, Zool. p. 62, pl. 16.

*Sordide fusco-nigricans, plumis medialiter obscurioribus, uropygio rufescente; alis albo trifasciatis: superciliis, regione auriculari et corpore subtus albis, vitta lata pectorali ex maculis confluentibus nigra: cauda nigricante, rectricibus lateralibus albo terminatis: rostro et pedibus nigris.*

Long. tota 10·6, alæ 5·0, caudæ 5·5.

*Hab.* Galapagos, Charles Island.

*Mus.* Brit.

#### 19. MIMUS MELANOTIS.

*Orpheus melanotis*, Gould, P. Z. S. 1837, p. 27; Darwin, Zool. Beagle, p. 62, pl. 17.

*Sordide fusco-nigricans, plumis medialiter obscurioribus: alarum tectricibus et secundariis albo terminatis: loris et regione auriculari nigris: superciliis albis: subtus sordide albus, hypochondriis nigricante striatis: cauda nigricante, rectricibus lateralibus omnibus albo terminatis: rostro et pedibus nigris.*

Long. tota 9·5, alæ 4·5, caudæ 4·5.

*Hab.* Galapagos, Chatham and James Islands.

*Mus.* Brit.

#### 20. MIMUS PARVULUS.

*Orpheus parvulus*, Gould, P. Z. S. 1837, p. 27; Darwin, Zool. Beagle, p. 63, pl. 18.

*Præcedenti similis, sed paulo minor: forsitan vix distinctus.*

*Hab.* Galapagos, Albemarle Island.

*Mus.* Brit.



## CONSPECTUS TURDORUM AMERICANORUM.

1. Eastern North America.	2. Western North America.	3. Mexico.	4. Guatemala and Central America.	5. Antilles.	6. New Granada.	7. Ecuador.	8. Eastern Peru.
		<i>infuscatus.</i> <i>pinicola.</i>	<i>infuscatus.</i> <i>ryflitorques.</i>	<i>xanthosecles.</i>		<i>atrosericeus.</i>	
<i>migratorius.</i>	<i>migratorius.</i> <i>naevius.</i>	<i>migratorius.</i> <i>grayii.</i> <i>assimilis.</i>	<i>grayii.</i> <i>leucauchen.</i>	<i>aurantius.</i>	<i>gigas.</i>  <i>cassius ?</i> <i>ignobilis.</i> <i>phaeopygus.</i>	<i>gigas.</i> <i>chiquanco.</i> <i>albiventris.</i>	<i>fuscater.</i>  <i>serranus.</i>
<i>mustelinus.</i> <i>pallasi.</i> <i>fuscescens.</i> <i>swainsoni.</i> <i>alcie.</i>	<i>nanus.</i> <i>ustulatus.</i>	<i>flavirostris.</i> <i>mustelinus.</i> <i>silens.</i> <i>swainsoni.</i>	<i>mustelinus.</i>  <i>swainsoni.</i>	<i>jamaicensis.</i> <i>mustelinus.</i>  <i>swainsoni.</i>	<i>fulviventris.</i>  <i>swainsoni.</i>		<i>swainsoni.</i>

CONSPECTUS (*continued*).

9.	10.	11.	12.	13.	14.	15.	16.
Interior of Bolivia.	Chili and Western Peru.	Patagonia.	Argent. republic. and Paraguay.	South-eastern Brazil.	North-eastern Brazil.	Guiana.	Venezuela and Trinidad.
<i>fuscater.</i>	<i>chiguanco.</i>		<i>fuscater.</i>	<i>flavipes.</i>	<i>fumigatus.</i>	<i>gymnophthalmus.</i> <i>fumigatus.</i>	<i>atrosericeus.</i>
				<i>fumigatus.</i>	<i>albiventris.</i>	<i>albiventris.</i>	<i>olivater.</i> <i>gymnophthalmus.</i>
				<i>crotopezus.</i>	<i>phaeopygus.</i>	<i>phaeopygus.</i>	
		<i>falklandicus.</i>	<i>rufiventris.</i>	<i>albicollis.</i>			
<i>rufiventris.</i>				<i>rufiventris.</i>			

15. ON SOME NEW FRESHWATER SHELLS FROM CENTRAL AFRICA. BY S. P. WOODWARD, F.G.S. COMMUNICATED BY PROF. OWEN.

(Mollusca, Pl. XLVII.)

The four shells which form the subject of the present note were collected by Captain Speke in the great freshwater Lake Tanganyika in Central Africa.

The large bivalve belongs to the genus *Iridina*, Lamarck,—a group of river-mussels, of which there are nine reputed species, all belonging to the African Continent. This little group has been divided into several subgenera. That to which the new shell belongs is distinguished by its broad and deeply-wrinkled hinge-line, and is called *Pleiodon* by Conrad. The posterior slope of this shell is encrusted with tufa, as if there were limestone rocks in the vicinity of its habitat.

The small bivalve is a normal *Unio*, with finely sculptured valves.

The smaller univalve is concave beneath, and so much resembles a *Nerita* or *Calyptrea* that it would be taken for a sea-shell if its history were not well authenticated. It agrees essentially with *Lithoglyphus*,—a genus peculiar to the Danube; for the American shells referred to it are probably, or, I may say, certainly distinct. It agrees with the Danubian shells in the extreme obliquity of the aperture, and differs in the width of the umbilicus, which in the European species is nearly concealed by the callous columellar lip.

In the Upper Eocene Tertiaries of the Isle of Wight there are several estuary shells, forming the genus *Globulus*, Sow., whose affinities are uncertain, but which resemble *Lithoglyphus*.

The Lake Tanganyika (situated in lat.  $3^{\circ}$  to  $8^{\circ}$  S. and long.  $30^{\circ}$  E.), which is several hundred miles in length and 30 to 40 in breadth, seems entirely disconnected with the region of the Danube: but the separation may not always have been so complete, for there is another great lake, Nyanza, to the northward of Tanganyika, which is believed by Speke to be the principal source of the Nile.

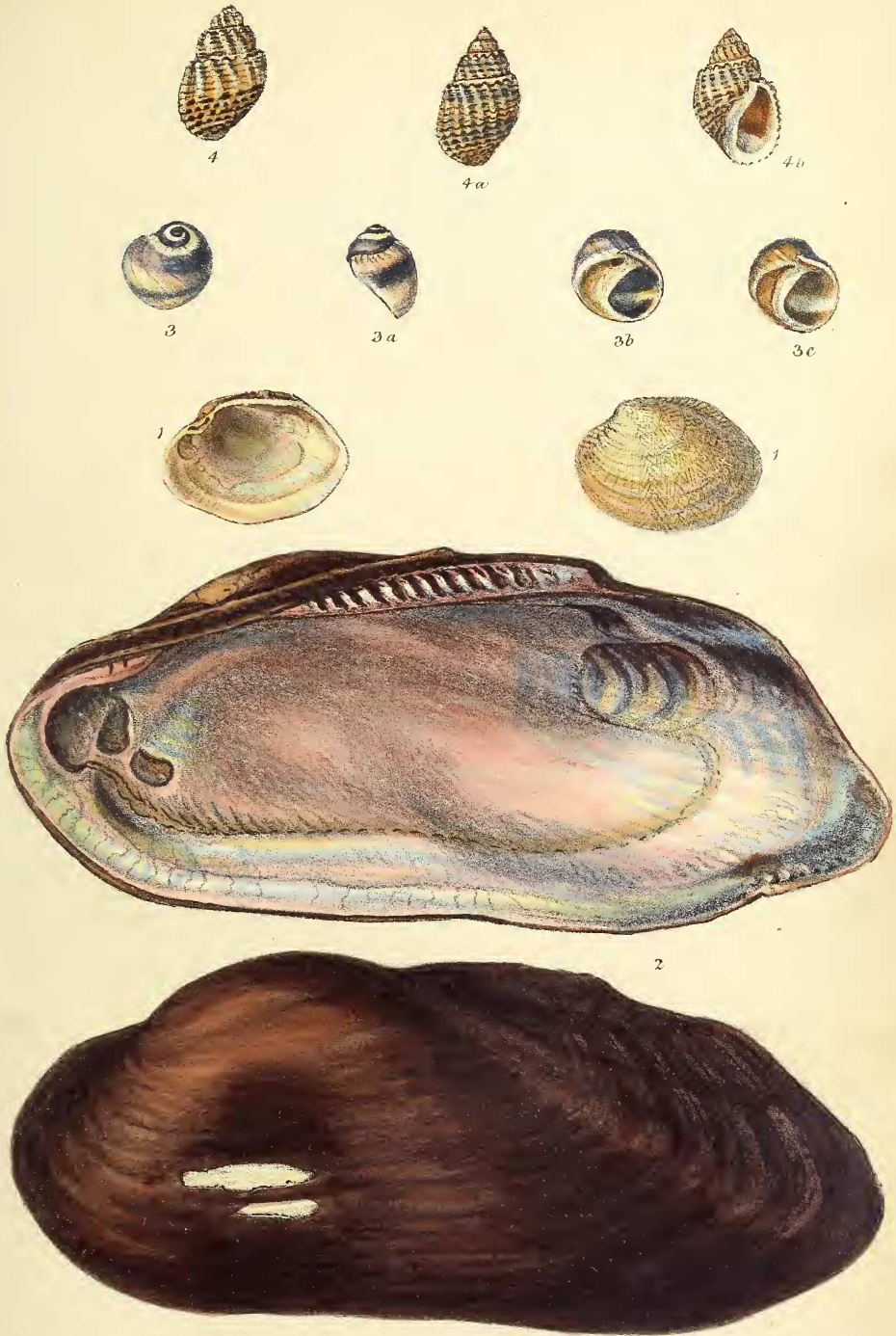
The other univalve is a *Melania*, of the subgenus *Melanella* (Swainson), similar in shape to *M. hollandi* of S. Europe, and similar to several Eocene species of the Isle of Wight. Its colour, solidity, and tuberculated ribs give it much the appearance of a small marine whelk (*Nassa*); and it is found in more boisterous waters, on the shores of this great Inland Sea, than most of its congeners inhabit.

1. IRIDINA (PLEIODON) SPEKII, n. sp. (Pl. XLVII. fig. 2.)

Shell oblong, ventricose, somewhat attenuated at each end; base slightly concave; epidermis chestnut-brown, deepening to black at the margin; anterior slope obscurely radiated; hinge-line compressed in front and tuberculated, wider behind and deeply wrinkled.

Length  $4\frac{3}{4}$ , breadth 2, thickness  $1\frac{3}{4}$  inches.

*Testa oblonga, tumida, extremitatibus fere attenuata, basi subarcuata; epidermide castaneo-fusca, marginem versus nigricante;*



G.B. Sowerby

W. Westring

Fig 1 *Unio Burtini* 2 *Iridina (Pleiodon) Spekii*.  
 „ 3 *Lithoglyphus zonatus* 4 *Melania nassa*.



*linea cardinali antice compressa tuberculata, postice latiore, paucis rugis arata.*

2. *UNIO BURTONI*, n. sp. (Pl. XLVII. fig. 1.)

Shell small, oval, rather thin, somewhat pointed behind; umbones small, not eroded; pale olive, concentrically furrowed, and sculptured more or less with fine divaricating lines; anterior teeth narrow, not prominent; posterior teeth laminar; pedal scar confluent with anterior adductor.

Length 12, breadth  $8\frac{1}{2}$ , thickness  $5\frac{1}{2}$  lines.

*Testa parva, ovalis, tenuiuscula, postice subattenuata; umbonibus parvis, acuminatis; epidermide pallide olivacea; valvis lineolis divaricatis, decussatim exaratis; dentibus cardinalibus angustis, haud prominentibus.*

3. *LITHOGLYPHUS ZONATUS*, n. sp. (Pl. XLVII. fig. 3.)

Shell orbicular, hemispherical; spire very small; aperture large, very oblique; umbilicus wide and shallow, with an open fissure in the young shell; lip continuous in front with the umbilical ridge; columella callous, ultimately covering the fissure; body-whirl flattened, pale olivaceous, with two brown bands, darker at the apex; lines of growth crossed by numerous oblique, interrupted striæ.

Diameter 5-6, height 3 lines.

*Testa orbicularis, hemisphærica, late umbilicata (apud juniores rimata), spira minuta; apertura magna, valde obliqua; labio calloso (in testa adulta rimam tegente): pallide olivacea, fasciis duabus fuscis zonata; lineis incrementi striolis interruptis oblique decussatis.*

4. *MELANIA (MELANELLA) NASSA*, n. sp. (Pl. XLVII. fig. 4.)

Shell ovate, strong, pale brown, with (sometimes) two dark bands; spire shorter than the aperture; whirls flattened, ornamented with six brown spiral ridges crossed by a variable number of white, tuberculated, transverse ribs; base of body-whirl with eight tuberculated spiral ridges variegated with white and brown; aperture sinuated in front; outer lip simple; inner lip callous.

Length  $8\frac{1}{2}$ , breadth  $5\frac{1}{2}$  lines.

*Testa ovata, solida, pallide fusca, zonis 2 nigricantibus aliquando notata; spira apertura brevior; anfractibus planulatis, lineis 6 fuscis spiralibus et costis tuberculatis ornatis; apertura antice sinuata; labro simplici; labio calloso.*

P.S. July 27th.—In addition to the foregoing shells, several others were collected by Capt. Speke, when employed, under the command of Capt. Burton, in exploring Central Africa in the years 1856-9; these were deposited in the first instance with the Geographical Society, and are now transferred to the British Museum.

A specimen of *Ampullaria (Lanistes) sinistrorsa*, Lea, and odd valves of two species of *Unio*, both smooth and olive-coloured, were picked up in the Ugogo district, an elevated plateau in lat.  $6^{\circ}$  to  $7^{\circ}$  S., long.  $34^{\circ}$  to  $35^{\circ}$  E.

A large *Achatina*, most nearly related to *A. glutinosa*, Pfr., is the "common snail" of the region between Lake Tanganyika and the East coast. Fossil specimens were obtained in the Usagara district, at a place called Maroro, 3000 feet above the sea, overlooking the Lufiji River, where it intersects the coast range (lat.  $7^{\circ}$  to  $8^{\circ}$  S., long.  $36^{\circ}$  to  $37^{\circ}$  E.).

Another common land snail of the same district is the well-known "*Bulimus caillaudi*, Pfr.," a shell more nearly related to *Achatina* than *Bulimus*.

Captain Speke also found a solitary example of *Bulimus ovoideus*, Brug., in a musjid on the island of Kiloa (lat.  $9^{\circ}$  S., long.  $39^{\circ}$  to  $40^{\circ}$  E.). This species is identical with *B. grandis*, Desh., from the island of Nosse Bé, Madagascar, and very closely allied to *B. libe-rianus*, Lea, from Guinea.

Mr. Hermann Schlagintweit exhibited specimens of heads of a Sheep from Thibet, which showed a curious modification in the form of the horns. He referred them to the sheep described as *Ovis hunia* by Mr. Hodgson (Journ. As. Soc. Bengal, i. p. 348, xvi. p. 1005; and Proc. Zool. Soc. for 1834, p. 99): but the specimens exhibited were remarkable on account of a curious malformation—the horny part of the two horns being entirely grown together so as to form apparently but one single horn. This might, it was stated, not improbably have given rise to one of the various modifications of the fabulous Unicorn of Thibet. This peculiar formation was only met with in tame animals; and in the three specimens laid before the Society (one of which was presented some time ago by Mr. Hodgson to the India House, the two others being from Messrs. Schlagintweit's collections) the upper part of the horns, which perhaps would have touched the animal's neck, had been artificially cut off.

It was considered to be well worthy of notice, that this peculiar malformation seemed to be limited to the *Ovis hunia*, none of the members being aware that a similar malformation was ever met with among either wild or domesticated sheep.

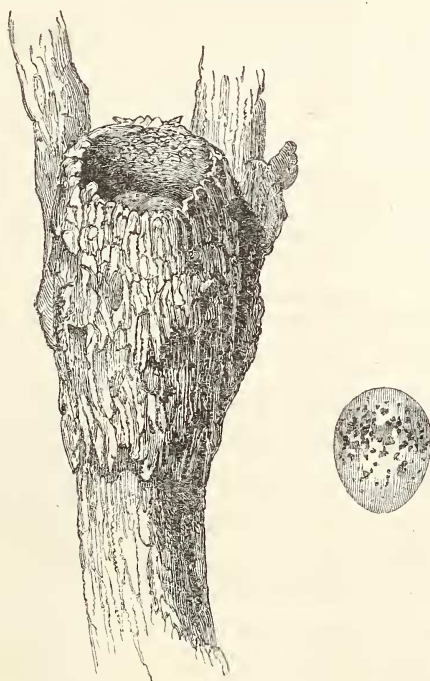
On searching the rich collections of London for similar objects, Messrs. Schlagintweit found one example in the College of Surgeons, where, by an evident mistake, it is called in the Catalogue a malformation of *Ovis ammon*. Another specimen was stated to exist in the British Museum.

The Secretary exhibited an egg laid by the Apteryx (*Apteryx mantelli*) which had been living in the Gardens since 1852. The egg when deposited (June 9th) weighed  $14\frac{1}{2}$  ozs., the contents thereof weighing  $13\frac{1}{2}$  ozs. The shell was smooth, and of a dirty white colour; the form an elongated oval, slightly tapering towards the small end, 4.75 inches in long, and 2.9 inches in short diameter. The weight of the living bird was ascertained to be 60 ozs.; so that the egg was nearly equal to one-fourth of the weight of the bird.

Mr. S. Stevens exhibited two beautiful new Butterflies collected by Mr. Wallace in the Island of Batchian. One of these was an *Ornithoptera* of the group containing *O. priamus* and its allies; the other a *Papilio* allied to *P. ulysses*.

Dr. George Bennett exhibited specimens of the egg of the Mooruk (*Casuarinus bennettii*).

Mr. Gould exhibited specimens of the new Paradise-bird (*Semioptera wallacii*) discovered by Mr. A. R. Wallace in the Island of Batchian, Moluccas, as mentioned at the meeting held on March 22nd (see *antea*, p. 129), and pointed out its peculiarities and supposed affinities, which, as he stated, seemed to be rather with *Ptilorhis* and its allies, than with the true *Paradisææ*. Mr. Gould also exhibited a drawing, by Mr. G. F. Angas of Sydney, of the nest and egg of *Sittella chrysoptera*. (See the accompanying woodcut.)



A series of twelve coloured drawings of various species of Nudi-branchiate Molluscs from the harbour and vicinity of Port Jackson, New South Wales, made by Mr. George French Angas, Secretary of the Australian Museum, Sydney, were exhibited to the Society. The drawings were all taken from living specimens, and afforded

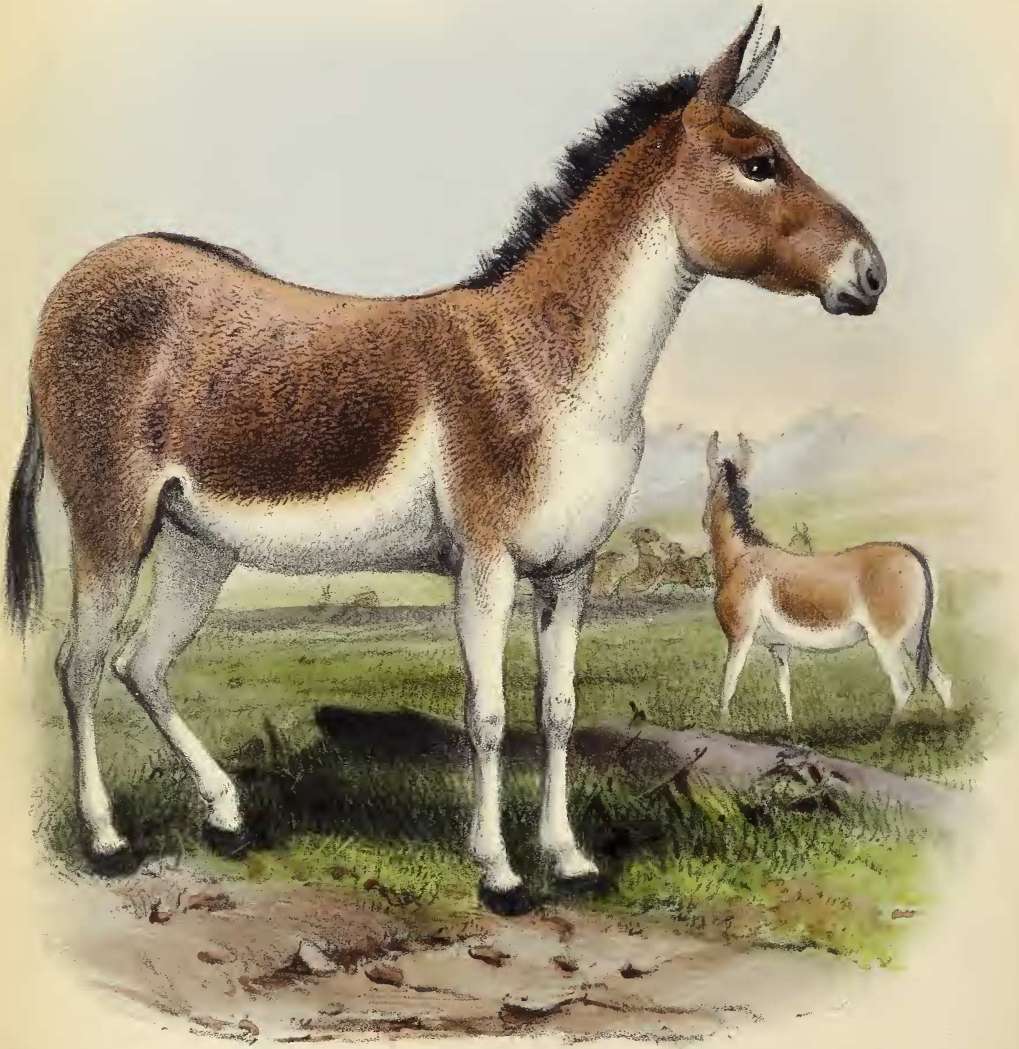
indications of thirty-four new species, and probably of two new genera of this class of animals.

The following list of additions to the Society's Menagerie by presentation and purchase during the month of June was read :—

2 Spring-boks .....	<i>Gazella euchore</i> .....	Presented by Sir George Grey, K.C.B.
2 Ostriches .....	<i>Struthio camelus</i> .....	Presented by Sir George Grey, K.C.B.
34 Wrasse .....	<i>Crenilabrus cornubicus</i> .....	Purchased.
6 Blennies .....	<i>Blennius pholis</i> .....	Purchased.
4 Cotti .....	<i>Cottus gobio</i> .....	Purchased.
1 Paradoxure .....	<i>Paradoxurus</i> — ? .....	Purchased.
1 Cobra .....	<i>Naia haje</i> .....	Purchased.
2 Green Tree-Snakes ...	<i>Philodryas viridissima</i> .....	Purchased.
1 Cirl Bunting .....	<i>Emberiza cirrus</i> .....	Purchased.
1 Capybara .....	<i>Hydrochærus capybara</i> .....	Purchased.
1 Shieldrake .....	<i>Tadorna vulpanser</i> .....	Presented by Mrs. Carew.
1 Capuchin Monkey ...	<i>Cebus</i> — ? .....	Purchased.
1 Water Lizard .....	<i>Hydrosaurus salvator</i> .....	Purchased.
1 Vervet Monkey .....	<i>Cercopithecus pygerythrus</i> ..	Presented by Comm. Beddingfield, R.N.
1 Macaque Monkey.....	<i>Macacus cynomolgus</i> .....	Presented by S. Graham, Esq.
1 Goat (Chinese variety)	<i>Capra hircus</i> , var.....	Presented by J. Bowman, Esq.
18 Wrasse .....	<i>Labrus maculatus</i> .....	Purchased.
1 Crested Blenny .....	<i>Blennius gallerita</i> .....	Purchased.
3 Green Tree-Frogs.....	<i>Hyla viridis</i> .....	Presented by Adam Duff, Esq.
2 Trumpeters .....	<i>Psophia crepitans</i> .....	Purchased.
2 Opossum Squirrels ...	<i>Belideus breviceps</i> .....	Presented by Charles Hutton, Esq.
6 Wonga Pigeons .....	<i>Leucosarcia picata</i> .....	Presented by Geo. Macleay, Esq., Corr. Memb.
3 Bronze-winged Pigeons	<i>Phaps chalcoptera</i> .....	Presented by Geo. Macleay, Esq., Corr. Memb.
1 Bush Bronze-winged Pigeon.	<i>Phaps elegans</i> .....	Presented by Geo. Macleay, Esq., Corr. Memb.
2 Turquoise Parrakeets	<i>Euphema pulchella</i> .....	Presented by Geo. Macleay, Esq., Corr. Memb.
2 Ichneumons .....	<i>Herpestes griseus</i> ? .....	Presented by H. Grant, Esq.
1 Black-tailed Parrakeet	<i>Polyteles melanurus</i> ♀ .....	Purchased.
1 Spotted Cavy .....	<i>Cælogenys paca</i> .....	Presented by D. A. Melville, Esq.
8 Guinea-Pigs .....	<i>Cavia aperea</i> .....	Presented by Master Abbott.
4 Spotted Gunnels .....	<i>Gunnellus guttatus</i> .....	Purchased.
3 Eels .....	<i>Anguilla</i> — ? .....	Purchased.
20 Viviparous Blennies...	<i>Zoarces viviparus</i> .....	Purchased.

Of these, the *Philodryas viridissima*, *Hydrosaurus salvator*, *Belideus breviceps*, and *Zoarces viviparus* were stated to be exhibited for the first time.





Wolf lith

M & N Hanhart, imp.

EQUUS KIANG.

November 8th, 1859.

John Gould, Esq., V.P., in the Chair.

Mr. Gould exhibited a specimen of a fine species of Pheasant from Siam, transmitted to him by Sir Robert Schomburgk. He stated that the oldest specific appellation for this bird, which had been called *Diardigallus praelatus* by the late Prince Bonaparte, and *Diardigallus fasciolatus* by Mr. Blyth, appeared to him to be *crawfurdi*. This name was established by Dr. J. E. Gray in Griffith's edition of Cuvier's 'Animal Kingdom' upon a drawing of a bird obtained by Mr. Crawford in Siam many years ago, which Mr. Gould regarded as representing the female of this species. He proposed therefore to call this bird *Diardigallus crawfurdi*.

Mr. Gould also exhibited a specimen of the Royal Spoonbill of Australia, *Platalea regia*.

The Secretary exhibited eggs of Montigny's Crane (*Grus montignesia*), the Demoiselle Crane (*Grus virgo*), and the Common Crane (*Grus cinerea*), laid by birds in the Society's Gardens; and an egg of the *Balæniceps rex*, obtained by Mr. Petherick on the White Nile.

The Rev. H. B. Tristram, F.L.S., exhibited some Mammals, Reptiles, Batrachians, and Fishes, collected by himself in the Algerian Sahara. Among the former were particularly noticed a Genet (*Genetta bonapartii*) and a small species of Hare (*Lepus*) from the oasis of Waregla.

Dr. A. Günther made some observations on the Reptiles, Batrachians, and Fishes exhibited by Mr. Tristram, some of which he considered as undescribed, and promised a full account of them at a future meeting.

The following papers were read:—

1. NOTES ON THE KIANG OF THIBET (EQUUS KIANG).  
BY MAJOR W. E. HAY, F.Z.S.

(Mammalia, Pl. LXXIII.)

In presenting a "Kiang" to the Zoological Society, I am only trying to merit a further continuance of the approbation so kindly and generously marked by the presentation to me of the Silver Medal in 1857, for the part I took in sending to England the Pheasants of the Himalaya. Together with the animal, the Society may probably expect some remarks from myself, as it has been in my possession for nearly two years.

The animal I now make over to the Society was an exchange present with the Zông-pûn, or Chinese Governor of Rûdôk, a Hill-fort

No. 406.—PROCEEDINGS OF THE ZOOLOGICAL SOCIETY.

situated beyond the Pâng-Kông Lake in Little Thibet. I had sent up from Kùllû to procure two dogs of enormous size, evidently of the same breed as was described by Marco Polo as being of the size of donkeys. One of these, however, had died, and the person deputed, thinking I should prefer a wild horse to a single dog, secured it for me. At that time it had never been haltered or handled. It was said to have been caught in a pit, and was much attached to a white Chûmûrti ghoont, which alone it would follow. In December 1857 it was delivered to me in Kùllû, but, the white ghoont being claimed by a Tibetan Lama, I purchased a Tibetan mule to keep it company. With this it did not agree, and the mule led anything but a happy life. The Kiang would, however, follow it, and was always restless unless it had some horse in company: of colours its preference was for white. It always showed the greatest aversion to pass over any of our vile wooden bridges; and when its companion passed over the bridge, waited until it saw that the latter had gained the opposite bank, and then in a fearless manner it would plunge into the most rapid stream and usually make a nearly straight course across. In leaving Kùllû to take it to Simla, it had to cross the river Biasm, which was at that season a foaming torrent. It plunged in, but was carried down the stream several hundred yards, and landed upon an island. Here it remained quietly all night until the following morning, when I had to send the mule across to the island to tempt it to follow to the shore, which it did. It afterwards crossed a broad part of the river with great ease, where it was less rapid. The Sutlej was at this season so full and running at such a frightful pace, that I deemed it advisable to throw the animal and secure it upon a raft, which was with great difficulty got across. I then brought it into Simla, where it gradually became accustomed to see more people and (to it) strange sights. I kept it there during the whole of one rainy season, although rather doubtful of the result, since Adolph Schlagintweit had given it as his decided opinion that the animal could not live under an elevation of 10,000 feet above the level of the sea. At Simla it was never a day sick. I thence had it marched to Ferozepore. On reaching the plains it seemed rather inclined to enjoy freedom, and I was obliged to have as many as four men to hold and lead it; and even then on several occasions it got away, but was not very difficult to secure again.

At Ferozepore I determined to get rid of the mule, which had thitherto accompanied it, and to take it down to Kurrachi by water in a boat purposely fitted up. When first I succeeded with much difficulty in getting it on board, the hollow sound of the boards beneath its feet so alarmed it that it cleared the side of the boat at one spring, carrying hatch and all with it. I then turfed the bottom, and by main force of many men pulled it again on board. It got on well to Kothree, when I again disembarked it, to its great delight. I then marched it across the country to Kurrachi; but, as I sent a strange horse with it, it was very uneasy, and, but for its old servant having accompanied it, would have run back to Kothree.

After keeping it a month at Kurrachi, I took a passage in the



barque 'Sumner,' laying in a large quantity of hay, kirbee, and dried lucern, also grain. The latter was worm-eaten, and it was long before the animal could be induced to touch it. Our passage was very long, and, the captain's people having unceremoniously used my provisions to feed their own stock, the Kiang was *twice* reduced to eat the straw with which the sailors' beddings had been stuffed.

This proves the hardness of the animal. At first it refused to drink any tainted water; but before reaching St. Helena, where I had to lay in fresh supplies, it would eat or drink almost anything.

The putting it on board the ship at Kurrachi was very difficult, and the poor thing struggled so much, that it was painful to watch it as it was lowered into the boat to be conveyed to the ship. So anxious were my friends concerning its safety, that a lady and gentleman who had allowed it to stand in their stables, and had given it many a tid bit of lucern, carrots, &c., came off in the boat with it. The sea was rough, and we had some miles to go to the ship; the shaking of the sails frightened it much. However, at last it was hoisted into the ship and placed in a house which had been built for it, and in which it continued until it reached England.

It became exceedingly knowing, and balanced itself so beautifully that I never had to sling it unless the weather was very rough. In an actual gale the poor creature laboured dreadfully, and seemed grateful for attention. It became latterly extremely docile, and always knew me by my voice. In crossing the line the first time the weather was very trying, and for three or four days the Kiang suffered greatly from the extreme heat. Its urinary organs became disordered; all the medicine I administered was a little sweet spirits of nitre. It recovered, and never afterwards during the whole voyage showed a symptom of sickness; and with the exception of about three days it always had a *voracious* appetite, and consumed in four as much as I had laid in for six months.

During the voyage the Kiang became twice in season for sexual intercourse. I may add that I never have allowed her to be placed with any stallion. That they do breed with the horse I was assured in Tibet, and that their produce was highly valued. It was also stated that the produce bred again, which is an interesting fact, and proves that the Kiang is more nearly allied to the horse than to the ass. Cunningham, in his 'Ladak and Surrounding Countries,' describes its dentition, &c.; but I cannot agree with him that its neigh resembles that of a horse. I have often heard this one attempt a neigh, but it is a sad failure; at the same time it as little resembles the bray of an ass; indeed its mode of calling to its companions is, like itself, quite unique. I feel confident that this female Kiang may be got to breed with a horse, and perhaps she would give the preference to one of a white colour.

I always found the Kiang very susceptible of kindness, its satisfaction being usually expressed by throwing its ears forwards; it generally shows a sort of pettish displeasure when any one is leaving it after giving it bread, &c. I twice placed a native of India on its back, but this was after it had gone a march, when it was slightly



distressed by the heat of the weather : it took no notice whatever of its rider. I have been accustomed to have the animal groomed with a curry-comb. I should recommend this to be continued ; it will keep the animal docile and improve its appearance.

I was convinced of the Kiang's specific difference from the wild Ass of Scinde, when I saw one of the latter at Delhi, intended for conveyance to England, and this made me persevere the more to get it home.

I have often watched the herds of this animal on the plains or slopes of hills in Tibet ; one invariably stands sentry at from 100 to 200 yards from the flock, and when danger is at hand he commences walking leisurely towards his companions. They take the alarm, and as soon as he comes up, off all go together in a trot or canter as the case may require.

I don't know to what space to limit the range of the Kiang. Marco Polo speaks of Asses, but evidently alludes to those of Persia. Huc and Gabet evidently saw them towards Lassa ; and I have been told that they are to be met with on all the level country between Ladak and Lassa, or in the valleys between the various ranges. I have seen them only north of the great Himalayan ranges, first upon the Rupcher plains and in the neighbourhood of the Salt Lakes, often in company with the *Ovis ammon* or "Nyan." I have also seen them north of the Pâng-Kông lake. The passes from Hindustan into Tibet are never open before June, when I have seen flocks of the Kiang feeding almost entirely on the roots of a species of *Artemisia*, or Worm-wood.

Their natural enemies besides man seemed to be a white panther, which lurks amongst the rocks ; and a large species of wolf. I have found their skeletons on the melting of the snow.

Beyond the Pâng-Kông lake I was informed that in winter many of them were to be seen in the Shap-Yok valley, in company with wild Yâks or Dông, also the "Nyan" (*Ovis ammon*), and the "Sûs" or Tibetan Antelope (*Panthalops hodgsoni*). A few tamarisk bushes seem then to support them, and at the end of winter all these animals are spoken of as being like walking skeletons. I have sometimes approached flocks of Kiang quite close, at other times could not get within a mile of them. On one occasion two Kiangs followed a pony on which I had a servant mounted,—in fact, kept so close that my servant feared they were going to attack him.

I never could ascertain satisfactorily when the Kiang breeds ; but I think it must bring forth in winter, for I have seen a mare shot with a young one in the womb, nearly mature, in August ; and in the many flocks I have met with running wild I never perceived a foal that I should have taken to be of less than six months old. When very young, the hair of the foal has the appearance of wool. The winter coat of the adult is also very thick and curly, and is of darker colour than its summer coat. It appears to shed its winter coat in May.

The Kiang may be said to inhabit plains and undulating hills, at from 15,000 to 16,500 feet above the sea ; if found in the steeper

hills, they have been driven there. It is most wonderful to see the rapidity with which they can ascend mountains, and although they descend quickly I never saw one lose its footing. After they have been pursued for some time on the hills and driven on to the plains, they will frequently make a charge past you at about 100 yards distance in preference to ascending the steep parts again, thus showing their preference for level ground. They are almost always seen in the neighbourhood of lakes or ponds in the unfrequented spots which are usually beyond the sportsman's beat.

2. ON THE SEA-LIONS, OR LOBOS MARINOS OF THE SPANIARDS, ON THE COAST OF CALIFORNIA. BY DR. J. E. GRAY, F.R.S., V.P.Z.S., P.E.S. &c.

(Mammalia, Pl. LXXII.)

Mr. John H. Gurney has kindly presented to the British Museum, along with a very interesting series of *Crustacea*, and the skins of some birds and animals from California, two skulls of Seals from that coast. One is the skull of a young *Arctocephalus*, belonging to a skin which Mr. Gurney gave to the Museum a year or more ago; and the other is a very fine adult skull of that genus, which is labelled—

“Skull and tongue bones of the Californian Sea-Lion (Spanish *Lobo marino*) taken near Monterey.—A. S. Taylor, July 1858.”

This skull is as large as, and very like in external appearance to, the skull of the adult *Otaria leonina*, or Southern Sea-bear of the southern part of the west coast of America, which we have in the British Museum from the coast of Chili.

These two large skulls are easily distinguished, and, when they are more closely examined, prove to belong to two different genera. The Californian skull has the short flat palate, contracted behind, of the genus *Arctocephalus*, and the other the very long deeply concave palate, nearly as wide behind as in front, of the genus *Otaria*. It also has the high nose, with a nearly horizontal facial line over the nose, of the former genus, instead of the low nose shelving towards the edge of the upper jaw of the *Otaria* or Sea-lion of Chili.

The adult skull is more than double the size of the adult skulls of the other species of *Arctocephali* which we have in the Museum Collection, and shows the existence of a Seal of a very large size in these seas,—as large as the Sea-lion of Chili.

It is not improbable that the skin sent some time ago, and the skull belonging to it now sent, may be the young of this species; though the skin is so like that of *Arctocephalus nigrescens*, that we were induced to regard it, before we received the skull, as a second specimen of that species. But the skull of the original specimen of that Seal shows that the adult animal and skull are not nearly half the size of the animal and skull of the *Lobo marino* of Monterey.

I may mention that we have well-developed adult skulls of the following species, which have been compared with the one here described :—

*Arctocephalus delalandii*, from the Cape, figured Proc. Zool. Soc. 1858, t. 69.

*Arctocephalus lobatus*, from Australia.

*Arctocephalus gillespii*, from California, l. c. t. 70.

*Arctocephalus ursinus*, from Behring's Straits, l. c. t. 68.

*Arctocephalus nigrescens*, from Falkland Islands?

The only one that nearly approaches it in size is that of the very old *Arctocephalus lobatus* from Australia; but this skull is at once known from that of the Monterey Sea-lion by having a rather deeply concave palate, much narrowed behind, and with a semicircular edge to the hinder palatine opening; while in the Monterey Sea-lion the palate is nearly flat, slightly concave in front, and not so contracted behind, and with a transverse hinder margin to the posterior opening.

The Monterey species is very distinct from *A. gillespii*, also from California, which, beside being very much smaller, not more than one-third of the size, has a much narrower skull with a longer face, and a very different form to the hinder palatine opening.

I refer the species to the third section, as defined in my previous paper in the Proceedings of the Zoological Society, 1859, p. 109, and propose to designate it by the name of

#### ARCTOCEPHALUS MONTERIENSIS. (Pl. LXXII., skull.)

Face rather short; palate rather concave in front, nearly flat behind, the hinder aperture rather contracted, with a nearly straight transverse hinder edge. Teeth large; the lower jaw rather elongate.

*Hab.* California (Monterey). Called *Lobo marino* by the Spaniards.

If the skin sent last year by Mr. Taylor to Mr. Gurney, and by that gentleman presented to the Museum, is the young of this species, the young animal is blackish, silvered by the short white tips to the short black hairs; those on the nape and sides of the hinder part of the body having longer white tips, making those parts whiter and more silvery. The under fur is very abundant, reaching nearly to the end of the hair. The end of the nose and sides of the face are whitish. The whiskers are elongate, rigid, smooth and white. The hind feet are elongate, with rather long flaps to the toes. The skull is very small for the size of the skin, and I should have doubted its belonging to the skin if it were not accompanied by the following label:

"Skull of the Fur-Seal I sent last year. It is very imperfect, from my forgetting where I had put it; but it must do until accident throws another in the way; the other bones were lost.—A. S. T."

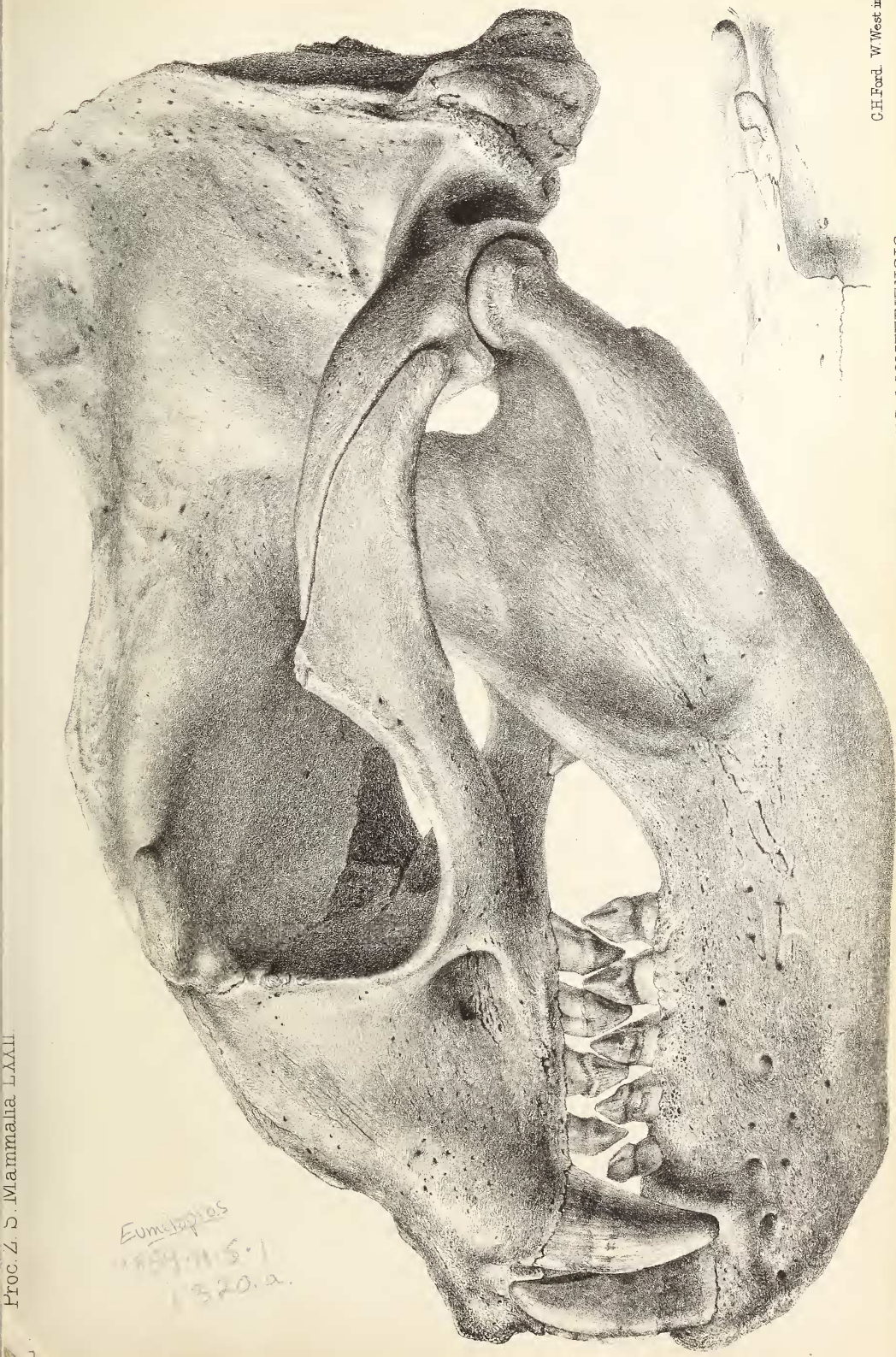
It is the skull of quite a young animal, with what I am induced to believe are its milk teeth, and, like the young skulls of most of the species of this genus, is very unlike the adult form. It also



*Eumetopias*

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differs from the adult one in the form of the hinder opening of the palate, which is very large and gradually contracted to an angle in front of the mouth. I am not aware that the form of this part is changed by the age of the specimen. It may be the case in this species, but it is not so in the only species with which I have the opportunity of comparing it, that is to say, in a series of skulls of different ages from the young to the adult, of a Seal of the allied genus *Otaria* (*O. leonina*).

The Monterey Seal may be the "Lion Marin de la Californie" of Choris, 'Voy. Pittoresque,' t. 11, from which *Phoca californiana* of Fischer's 'Synopsis Mammalium,' p. 231, the *Otaria californiana* of Lesson, have been derived; but the accounts of the species are so very slight, that there is nothing but the habitat and the name to lead one; and we already have two very distinct species of Sea Lions—*Arctocephalus monteriensis* and *A. gillespii*—from California.

The skull of the Behring Straits Sea-Bear is so distinct from that of the other species, that I am induced to suggest that it should be regarded as a distinct genus from the *Arctocephali* of F. Cuvier. The three genera may be thus defined.

## I. CALLORHINUS.

The face short, forehead convex, regularly rounded from the end of the nasal bone to the middle of the vertex; the nasal opening is small; the palate rather concave, contracted behind, short, nearly reaching the middle of the zygomatic arch. Lower jaw short, thick, flattened, expanded beneath just in front of the condyle.

### 1. CALLORHINUS URSINUS.

*Arctocephalus ursinus*, Gray, Proc. Zool. Soc. 1859, pl. 68. p. 1082

## II. ARCTOCEPHALUS.

The face rather elongate; the forehead flattened and nearly horizontal from the nasal bone to the vertex; the palate rather concave, contracted behind, short, not reaching beyond the middle of the zygomatic arch; the nose aperture large, high; the lower jaws moderate, with a crest-like ridge behind beneath just in front of the condyle.

The crest-like process on the hinder part of the under edge of the large jaw differs rather in shape and development in the different species; but it nowhere resembles the flat expanded disk found in a similar situation in the lower jaw of the preceding genus.

In my former paper I divided this subgenus into two sections, separating *A. hookeri* from the other species; but I had only young or half-grown specimens of the skulls of this species; and, since I have obtained the young skull from California, I am induced to believe the slight convexity of the forehead and the slenderness of the lower jaw to be dependent on the age of the specimen, and that most probably the forehead of the adult animal becomes flatter, and the lower jaw stronger, as the animal increases in age.

The skulls which we have may be divided, according to the form of the hinder edge of the palate, thus :—

\* *The hinder edge of the palate, transversely truncated.*

1. *Arctocephalus monteriensis*, pl. 72.

Skull broad.

California.

2. *Arctocephalus hookeri*.

Skull narrow, elongate.

Falkland Islands and Cape Horn.

\*\* *The hinder edge of the palate slightly arched, hemispherical.*

3. *Arctocephalus lobatus*.

Skull broad.

Australia (Port Essington).

4. *Arctocephalus nigrescens*.

Skull broad.

Falkland Islands?

\*\*\* *The hinder edge of the palate contracted, ovate.*

5. *Arctocephalus gillessii*, antea p. 110, pl. 70.

The skull elongate, narrow.

California.

6. *Arctocephalus delalandii*, antea p. 107, pl. 69.

Skull short and broad.

Cape of Good Hope.

\*\*\*\* *The palate very short, hind edge contracted, acute, angular.*

7. The young skull from California above noticed.

The skull of *A. hookeri*, in the concavity and comparative greater width of the palate behind, and in the form of the hinder palatine opening, most resembles that of the genus *Otaria*; but it is very distinct from the skulls of that genus, which may be thus defined.

### III. OTARIA.

Face short, shelving; the nose aperture large, oblong; the forehead flat, shelving from the edge of the nose-bone to the middle of the vertex; the palate very concave, decurved deeper with age, scarcely contracted behind; ear elongated, extending nearly to the articulation of the lower jaw; the lower jaw with a crest-like ridge on the inner side of the hinder part, just in front of the condyle.

There is doubtless a great difference in the development of the skull in the male and female Seals, but unfortunately the sex of the specimens from which the skulls have been derived is not marked. In the only species where I have been able to observe this fact,

almost the only difference was in the size and in the strength of the marking on the skull, and in the size of the canine teeth. The full number of the teeth of these animals is developed early in life; and the canines of the second set are gradually developed, the roots being far in the socket, and protruded as the jaw enlarges.

The changes in the form of the palate and of the distance between the teeth of the same set in the younger and older skull of the same species after they have obtained their full set of teeth is very great, quite as much as the difference in the external form of the skull produced by the development of the occipital ridges, &c.

The following are the measurements of the different skulls in inches and eighths:—

Extreme length along base of skull...		
Length of palate .....		
Length of lower jaw .....		
Breadth of face at ear-bones .....		
Breadth at zygomatic arch .....		
Breadth of condyles .....		
9 4	5 0	<i>Callorhinus ursinus</i> , adult.
14 0	8 2	<i>Arctocephalus monte-</i> <i>riensis</i> , adult.
10 0	5 6	<i>Arctocephalus hookeri</i> , half-grown.
11 6	6 0	<i>Arctocephalus lobatus</i> , very old.
8 0	5 2	<i>Arctocephalus nigres-</i> <i>cens</i> .
11 0	5 6	<i>Arctocephalus gillespii</i> .
10 4	6 6	<i>Arctocephalus dela-</i> <i>landii</i> .
7 2	4 2	<i>Arctocephalus</i> , young from California.
13 2	9 0	<i>Otaria leonina</i> , aged.
8 4	4 6	<i>Otaria leonina</i> , half- grown.

3. ON A SERIES OF BIRDS COLLECTED IN THE VICINITY OF JALAPA, IN SOUTHERN MEXICO. BY PHILIP LUTLEY SCLATER, M.A., F.L.S., SECRETARY TO THE SOCIETY.

Mr. J. H. Gurney has kindly placed in my hands for examination a series of about 850 skins of birds collected by Señor Raphael Montes de Oca in the vicinity of Jalapa in the State of Vera Cruz. The greater number of the species have already occurred in M. Sallé's and other collections formed in the same country, which I have from time to time brought before the notice of the Society\*; but there are several amongst them which have not been obtained by former collectors, and others of rare occurrence.

The following is a list of all the species, with remarks upon such as are new or rare in each family.

Fam. TURDIDÆ.

- |                                     |   |
|-------------------------------------|---|
| 1. <i>Turdus infuscatus</i> , Lafr. | 7. <i>Catharus melpomene</i> (Cab.).    |
| 2. — <i>migratorius</i> , Linn.     | 8. <i>Melanotis cærulescens</i> (Sw.).  |
| 3. — <i>grayii</i> , Bp.            | 9. <i>Galeoscoptes carolinensis</i>     |
| 4. — <i>assimilis</i> , Cab.        | (Linn.).                                |
| 5. — <i>pinicola</i> , Sclater.     | 10. <i>Harporhynchus longirostris</i> , |
| 6. — <i>mustelinus</i> , Gm.        | Sw.                                     |

These birds have all occurred in previous collections from this State, with the exception of *Turdus pinicola* and *Turdus infuscatus*. The former of these I described in my "Synopsis of American Thrushes," read before the Society in June last (see *antea*, p. 334), from M. de Oca's specimens, which are now in my collection. M. de Oca informed me that he met with but a single pair of this species on the high land among the pines, whence I named it *pinicola*. The Mexican representative of our Blackbird (*Turdus infuscatus*), I have until lately only seen in collections from Guatemala. The present series contained five males and a single female—so that bird would appear not to be rare in these parts. M. Boucard has recently obtained specimens, as noted below, in the State of Oaxaca.

Fam. CINCLIDÆ.

11. *Cinclus mexicanus*, Sw.

A single specimen of this Dipper was in the collection.

Fam. SYLVIIDÆ.

- |                                  |                                |
|----------------------------------|--------------------------------|
| 12. <i>Sialia wilsoni</i> , Sw.  | 14. <i>Regulus calendula</i> . |
| 13. <i>Sialia mexicana</i> , Sw. |                                |

Fam. CETHIIDÆ.

15. *Certhia mexicana*, Reichb.

\* See P. Z. S. 1856, p. 283; 1857, pp. 81, 201, 210, 226; and 1858, p. 294.



## Fam. TROGLODYTIDÆ.

16. *Troglodytes ædon*, Vieill. ? 19. *Campylorhynchus megalopterus* (Lafr.).  
 17. *Thryothorus maculipet-  
tus*, Lafr. 20. — *zonatus* (Less.).  
 18. *Cyphorhinus prosthelus*,  
Sclater. 21. — *capistratus* (Less.).

## Fam. PARIDÆ.

22. *Sitta carolinensis*, Lath. 25. *Polioptila cærulea* (Linn.).  
 23. — *pygmæa*, Vig. 26. — *mexicana* (Bp.).  
 24. *Parus meridionalis*, Scl.

The occurrence of *Sitta pygmæa*, a Californian species, now noticed for the first time on this side of Mexico, is curious. I have no northern specimens of *Sitta carolinensis*; but there is considerable difference in the dimensions of these skins from Jalapa and one from Oaxaca, collected by M. Boucard:—

	ex Jalapa.	ex Oaxaca.
Long. tota.....	4·9	4·6
alæ .....	3·6	3·35
caudæ.....	1·85	1·70
rostri a rictu .....	0·75	0·70
tarsi .....	0·70	0·65

## Fam. MNIOTILTIDÆ.

27. *Siurus noveboracensis* (Gm.). 37. *Dendroæca superciliosa*.  
 28. — *ludovicianus*, Bp. 38. — *olivacea*.  
 29. *Mniotilta varia* (Linn.). 39. — *icterocephala*.  
 30. *Geothlypis trichas* (Linn.). 40. — *æstiva*.  
 31. — *macgillivraii* (Aud.). 41. — *maculosa*.  
 32. *Helminthos vermivorus*. 42. *Myiodiactes pusillus*.  
 33. *Helminthophaga rubricapilla*. 43. *Cardellina rubra* (Sw.).  
 34. *Dendroæca virens* (Gm.). 44. *Basileuterus rubrifrons*.  
 35. — *coronata* (Linn.). 45. *Euthlypis lacrymosa*, Cab.  
 36. — *blackburniæ* (Gm.). 46. *Setophaga miniata* (Sw.).

Of these Wood-warblers, *Geothlypis macgillivraii*, *Helminthos vermivorus*, *Dendroæca icterocephala*, and *D. maculosa* have not hitherto been noticed as occurring in collections from Vera Cruz.

## Fam. VIREONIDÆ.

47. *Vireosylva olivacea* (Linn.). 50. *Cyclorhis flaviventris*, Lafr.  
 48. *Vireo solitarius* (Wils.). 51. *Icteria velasquezii*, Bp.  
 49. *Vireolanus melitophrys*, Bp.

The bill of the Mexican *Icteriæ* is always thicker than in N. American birds, and *white* at the base of the lower mandible. I have never yet seen specimens of the true N. American *Icteria viridis* from Mexico.

## Fam. HIRUNDINIDÆ.

52. *Progne dominicensis* (Gm.). 54. *Cotyle fulvipennis*, sp. nov.  
 53. *Petrochelidon bicolor* (Vieill.).

## COTYLE FULVIPENNIS, sp. nov.

*Murino-brunnea, alis caudaque obscurioribus, alarum tectricibus omnibus et secundariis fulvescenti-rufo extus late marginatis, dorso imo eodem colore vix tincto: subtus sordide alba, lateraliter obscurior, ventre medio crissoque pure albis: gutture et pectore toto et campterio alarum colore fulvescenti-rufo perfusis: rostro nigro: pedibus pallide brunneis.*

Long. tota 4·2, alæ 3·7, caudæ 1·7.

This pretty little *Cotyle* is most nearly allied to *C. flavigastra* of S. America, though considerably smaller in size. The edgings of the wings, which in the latter species are white, are here of a pale tawny rufous, whence I have called it *fulvipennis*; and the same colour pervades the neck, breast, and bend of the wings below. The belly is also white instead of being yellow.

The only other *Cotyle* I consider as undoubtedly Mexican is *Cotyle serripennis*; for I cannot help thinking that the single example of *C. flavigastra*, which occurred in M. Botteri's collection (mentioned in P. Z. S. 1857, p. 211), must have been a South American skin introduced by accident.

## Fam. AMPELIDÆ.

55. *Ptilogonys cinereus* (Sw.). 57. *Ampelis cedrorum* (Vieill.).  
 56. *Myiadestes obscurus* (Lafr.).

## Fam. CÆREBIDÆ.

58. *Certhiola mexicana*, Scl. 59. *Diglossa baritula*, Wagl.

## Fam. TANAGRIDÆ.

- |   |                                       |
|---|---------------------------------------|
| 60. <i>Chlorophonia occipitalis</i> .         | 70. <i>Phænicothraupis rubi-</i>      |
| 61. <i>Euphonia elegantissima</i> .           | <i>coides</i> (Lafr.).                |
| 62. — <i>hirundinacea</i> , Bp.               | 71. <i>Buarremon albinuchus</i>       |
| 63. <i>Tanagra abbas</i> , Less.              | (d'Orb. & Lafr.).                     |
| 64. — <i>diaconus</i> , Less.                 | 72. — <i>brunneinuchus</i> (Lafr.).   |
| 65. <i>Ramphocelus sanguinolentus</i> , Less. | 73. <i>Chlorospingus ophthalmicus</i> |
| 66. <i>Pyranga æstiva</i> (Linn.).            | (Du Bus).                             |
| 67. — <i>hepatica</i> , Sw.                   | 74. <i>Saltator atriceps</i> , Less.  |
| 68. — <i>erythromelæna</i> , Licht.           | 75. — <i>magnoides</i> , Lafr.        |
| 69. <i>Pyranga bidentata</i> (Sw.).           | 76. — <i>grandis</i> (Licht.).        |

All these Tanagers have already been noticed as either in M. Sallé's or M. Botteri's collections from Vera Cruz. A curious variety of *Buarremon albinuchus* has the throat nearly of a crimson colour.

## Fam. FRINGILLIDÆ.

- |   |  |
|---|--|
| 77. <i>Cardinalis virginianus</i> , Bp. | 86. <i>Chamaespiza torquata</i>        |
| 78. <i>Hedymeles ludovicianus</i> .     | (Du Bus).                              |
| 79. — <i>melanocephalus</i> (Sw.).      | 87. <i>Passerculus lincolni</i> , Aud. |
| 80. <i>Coccothraustes abeillei</i> ,    | 88. <i>Spizella socialis</i> (Wils.).  |
| Less.                                   | 89. <i>Junco cinereus</i> (Sw.).       |
| 81. <i>Guiraca cærulea</i> (Linn.).     | 90. <i>Hæmophila rufescens</i> , Sw.   |
| 82. — <i>parellina</i> (Bp.).           | 91. <i>Chrysomitris mexicana</i> , Sw. |
| 83. <i>Spiza versicolor</i> , Bp.       | 92. — <i>notata</i> , Du Bus.          |
| 84. <i>Volatinia jacarina</i> (Linn.).  | 93. <i>Spermophila moreleti</i> , Bp.  |
| 85. <i>Phonipara pusilla</i> (Sw.).     | 94. <i>Loxia mexicana</i> , Strickl.   |

Two Finches occur in this list which I have not myself previously observed in Mexican collections. The beautiful Mexican Grosbeak (*Coccothraustes abeillei*), a close ally of the North American *Coccothraustes vespertinus*, was only known to me from Guatemalan specimens transmitted by Mr. Skinner\*. The Cross-bill I refer to *Loxia mexicana*, described by Strickland from examples collected near the city of Mexico (Contr. Orn. 1851, p. 43 (note)). I have not the means of comparing it with other American species.

## Fam. ICTERIDÆ.

- |   |  |
|---|--|
| 95. <i>Hyphantès baltimorensis</i> .    | 101. <i>Cassiculus prevosti</i> (Less.). |
| 96. <i>Bananivorus affinis</i> (Lawr.). | 102. <i>Sturnella hippocrepis</i> ?      |
| 97. <i>Icterus gularis</i> (Wagl.).     | 103. <i>Molothrus pecoris</i> ?          |
| 98. — <i>melanocephalus</i> .           | 104. — <i>æneus</i> (Wagl.).             |
| 99. <i>Cacicus montezumæ</i> (Less.).   | 105. <i>Quiscalus sumichrasti</i> , de   |
| 100. <i>Agelæus gubernator</i> .        | Sauss.                                   |

M. de Oca's collection contained one example of *Quiscalus sumichrasti*, lately described by M. H. de Saussure (Rev. Zool. 1859, p. 19). The same bird was in M. Sallé's first collection (*Quiscalus*, sp. 137, P. Z. S. 1856, p. 300), and I have also examples collected by Botteri.

## Fam. CORVIDÆ.

- |  |                                   |
|--|-----------------------------------|
| 106. <i>Psilorhinus morio</i> (Wagl.). | 110. <i>Cyanocorax unicolor</i> , |
| 107. <i>Cyanocorax luxuosus</i> .      | Du Bus.                           |
| 108. — <i>ultramarinus</i> .           | 111. — <i>nanus</i> , Du Bus.     |
| 109. — <i>ornatus</i> .                | 112. — <i>coronatus</i> , Sw.     |

## Fam. DENDROCOLAPTIDÆ.

- |  |  |
|--|--|
| 113. <i>Picolaptes affinis</i> (Sw.).  | 115. <i>Sittasomus sylvioides</i> , Laf. |
| 114. <i>Dendroornis erythropygia</i> , | 116. <i>Sclerurus mexicanus</i> , Sel.   |
| sp. nov.                               | 117. <i>Anabates rubiginosus</i> , Sel.  |

The *Dendroornis erythropygia* has occurred in several previous collections, but I have hitherto confounded it with *D. triangularis* of New Granada, from which it appears truly distinct.

\* See "Ibis," 1859, p. 19.

## DENDRORNIS ERYTHROPYGIA, sp. nov.

*Dendrornis triangularis*, Sclater, P. Z. S. 1856, p. 289, nec Lafr.

*Supra obscure olivacea, secundariis extus, uropygio toto et cauda rubiginoso-rufis; capite striis, dorso medio maculis ovalibus ochraceo-albidis distincte notato: subtus obscure olivacea, guttis subtriangularibus pallide ochraceo-albidis, in gula crebrioribus, et totas fere plumas occupantibus notata: rostri albicantis parte culminali nigricanti-cornea: pedibus nigris.*

Long. tota 9·0, alæ 4·6, caudæ 4·0, rostri a rictu 1·45.

*Hab.* In Stat. Veræ Crucis et Oaxaca reipubl. Mexicanæ (*Sallé et Boucard*).

*Mus.* P. L. S.

*Obs.* Affinis *Dendrornithi triangulari* ex Nova Granada, sed secundariis extus et uropygio omnino rufis, guttis intercapulii ovalibus et gutture fere toto ochraceo facili distinguenta.

## Fam. FORMICARIIDÆ.

- |   |   |
|---|---|
| 118. <i>Thamnophilus doliatus</i><br>(Linn.). | 119. <i>Grallaria guatemalensis</i> ,<br>Prévost. |
|---|---|

## Fam. TYRANNIDÆ.

- 120. *Scaphorhynchus mexicanus*, Lafr.
- 121. *Pitangus derbianus*, Kp.
- 122. *Tyrannus melancholicus* (Vieill.).
- 123. *Contopus borealis* (Sw.).
- 124. *Myiozetetes texensis* (Giraud).
- 125. *Myiodynastes luteiventris*, Sclater.
- 126. *Pyrocephalus mexicanus*, Sclater.
- 127. *Sayornis pallida* (Sw.).
- 128. *Mitrephorus phæocercus*, Sclater.
- 129. *Mionectes assimilis*, Sclater.
- 130. *Legatus variegatus*, Sclater.
- 131. *Myiarchus lawrencii* (Cass.).
- 132. — *fuscus* (Gm.).
- 133. *Empidonax flaviventris*, Baird.
- 134. *Attila citreopygius*, Bp.

## Fam. COTINGIDÆ.

- 135. *Tityra personata* (Jard. & Selb.).
- 136. *Platypsaris affinis*, Elliot.
- 137. *Pachyrhamphus major*, Cab.

Numerous specimens of a rosy-breasted Becard are in the collection, which seem all referable to the light-backed bird lately distinguished by Mr. Elliot as *Platypsaris affinis* (Ibis, 1859, p. 394. pl. 13). On the other hand, specimens from Oaxaca and Central America belong to the dark-backed variety, which he considers to be the true *P. aglaia*. There is certainly no difference in size between



some individuals of the two supposed species, for I have examined skins of *P. affinis* quite as large as those of *P. aglaia*.

Fam. MOMOTIDÆ.

138. *Momotus cæruleiceps*, Gould.

Fam. CAPRIMULGIDÆ.

139. *Nyctidromus americanus*? 140. *Antrostomus vociferus*?

Fam. TROGONIDÆ.

141. *Trogon caligatus*, Gould. 143. *Trogon mexicanus*, Sw.  
142. — *melanocephalus*, Gld. 144. — *puella*, Gould.

Fam. ALCEDINIDÆ.

145. *Ceryle alcyon* (Linn.). 146. *Ceryle americana* (Gm.).

Fam. TROCHILIDÆ.

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|---|--|
| 147. <i>Phaëthornis adolphi</i> ,<br>Gould.         | 154. <i>Delattria rhami</i> (Less.).             |
| 148. <i>Lampornis prevosti</i><br>(Bourc. & Muls.). | 155. — <i>clemenciæ</i> (Less.).                 |
| 149. <i>Campylopterus pampa</i><br>(Less.).         | 156. <i>Cyanomyia cyanocephala</i> .             |
| 150. — <i>delattrii</i> (Less.).                    | 157. <i>Amazilius arsinoë</i> (Less.).           |
| 151. <i>Petasophora thalassina</i><br>(Sw.).        | 158. — <i>ocai</i> , Gould.                      |
| 152. <i>Cæligena fulgens</i> (Sw.).                 | 159. <i>Sporadinus caniveti</i><br>(Less.).      |
| 153. <i>Delattria henrici</i> (Less.).              | 160. <i>Circe latirostris</i> (Sw.).             |
|   | 161. <i>Trochilus colubris</i> , Linn.           |
|   | 162. <i>Tryphæna heloisæ</i> (Less.<br>et Del.). |

The only Humming-bird in this collection not previously well known as an inhabitant of Mexico was *Amazilius ocai*, described from M. de Oca's specimens by Mr. Gould in the 'Annals and Magazine of Natural History' for August last (ser. 3, vol. iv. p. 96).

Fam. PICIDÆ.

- |  |  |
|--|--|
| 163. <i>Dryocopus scapularis</i> (Vig.).                   | 168. <i>Chloronerpes oleagineus</i><br>(Licht.). |
| 164. — <i>guatemalensis</i><br>(Hartl.).                   | 169. <i>Centurus santacruzi</i> (Bp.).           |
| 165. <i>Colaptes mexicanus</i> (Sw.).                      | 170. <i>Picus scalaris</i> , Wagl.               |
| 166. <i>Melanerpes formicivorus</i><br>(Sw.).              | 171. — <i>varius</i> , Linn.                     |
| 167. <i>Chloronerpes yucata-</i><br><i>nensis</i> (Cabot). | 172. — <i>jardini</i> , Malh.                    |
|  | 173. — <i>stricklandii</i> , Malh.               |

*Picus stricklandi* is the same bird as in Sallé's first collection I called *P. cancellatus* upon Prince Bonaparte's authority. It is described by M. Malherbe in the 'Revue Zoologique' for 1845 (p. 375). There was but one specimen in M. de Oca's collection.

## Fam. RHAMPHASTIDÆ.

174. *Rhamphastos carinatus*, Sw. 175. *Aulacorhamphus prasinus*, Gould.

## Fam. PSITTACIDÆ.

176. *Ara pachyrhyncha* (Sw.). 177. *Conurus holochlorus*, Scl.

Neither of these Parrots have occurred in previous collections from Vera Cruz. The *Conurus* I described from M. de Oca's specimens in the 'Annals and Magazine of Natural History' for July last (ser. 3, vol. iv. p. 224).

## Fam. CUCULIDÆ.

178. *Piaya thermophila*, sp. nov. 180. *Dromococcyx mexicanus*,  
179. *Crotophaga sulcirostris*, Bp.  
Sw. 181. *Geococcyx affinis*, Hartl.

*Piaya thermophila* is the common species of the *tierra caliente*, which I have hitherto referred to Swainson's *Cuculus mexicanus*. Having now received the true *P. mexicana* (with the tail-feathers red, as described by Swainson: see below, p. 388), I propose to call this bird

## PIAYA THERMOPHILA.

*Saturate castanea, subtus cinerea, gutture pallide cinnamomeo-rufescente, ventre imo crissoque nigricantibus: caudæ rectricibus subtus unicolori-nigricantibus, lateralibus in pogonio exteriori et mediis duabus in utroque pogonio rufescentibus, omnibus albo late terminatis: rostri plumbei culmine et apice toto flavo-virentibus: pedibus nigris.*

Long. tota 17·0, alæ 6·2, caudæ 10·8.

*Hab.* In terra calida reipublicæ Mexicanæ et in Guatemala.

*Mus.* P. L. S.

## Fam. FALCONIDÆ.

182. *Polyborus tharus* (Mol.). 187. *Asturina nitida*.  
183. *Herpetotheres cachinnans* 188. — *magnirostris*.  
(Linn.). 189. *Micrastur xanthothorax*  
184. *Buteo borealis* (Gm.). (Temm.)?  
185. — *erythronotus* (Lafr. 190. *Tinnunculus sparverius*.  
et d'Orb.). 191. *Ictinia plumbea*.  
186. *Asturina albifrons*. 192. *Hypotriorchis femoralis*.

## Fam. STRIGIDÆ.

193. *Syrnium virgatum*. 194. *Pholeoptynx hypogæa*.

## Fam. COLUMBIDÆ.

195. *Geotrygon montana*. 197. *Zenaida leucoptera*.  
196. — *albifacies*, G. R. Gr. 198. *Leptoptila albifrons*.

- |                                      |                                |
|--------------------------------------|--------------------------------|
| 199. <i>Zenaidura carolinensis</i> . | 202. <i>Columba fasciata</i> . |
| 200. <i>Chamæpelia passerina</i> .   | 203. — <i>flavirostris</i> .   |
| 201. — <i>rufipennis</i> .           |                                |

## Fam. CRACIDÆ.

- |                                     |                               |
|-------------------------------------|-------------------------------|
| 204. <i>Penelope purpurascens</i> . | 205. <i>Ortalida vetula</i> . |
|-------------------------------------|-------------------------------|

## Fam. PERDICIDÆ.

- |                                   |                                       |
|-----------------------------------|---------------------------------------|
| 206. <i>Dendrortyx barbatus</i> . | 208. <i>Odontophorus thoracicus</i> . |
| 207. <i>Ortyx pectoralis</i> .    |                                       |

## Fam. TINAMIDÆ.

209. *Tinamus salliæi*, Bp.

## GRALLÆ.

- |                                     |                                     |
|-------------------------------------|-------------------------------------|
| 210. <i>Gullinago wilsoni</i> .     | 216. <i>Butorides virescens</i> .   |
| 211. <i>Charadrius virginicus</i> . | 217. <i>Garzetta candidissima</i> . |
| 212. <i>Ægialites vociferus</i> .   | 218. <i>Herodias egretta</i> .      |
| 213. <i>Calidris arenaria</i> .     | 219. <i>Nycticorax gardeni</i> .    |
| 214. <i>Canceroma cochlearia</i> .  | 220. <i>Fulica americana</i> .      |
| 215. <i>Botaurus lentiginosus</i> . |                                     |

## NATATORES.

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|--|-------------------------------------|
| 221. <i>Anas maxima</i> , Gosse.       | 224. <i>Lophodytes cucullatus</i> . |
| 222. <i>Querquedula carolinensis</i> . | 225. <i>Podiceps dominicus</i> .    |
| 223. <i>Fuligula affinis</i> .         | 226. <i>Plotus anHINGA</i> .        |

*Anas maxima* of Gosse is, no doubt, the bird referred to in Prof. Baird's Report on N. American Ornithology (p. 774) as the large variety of the Mallard. *Fuligula affinis* has already been noticed as far south as Guatemala (Salvin, in 'Ibis,' 1859, p. 231), though not hitherto brought from Mexico.

4. LIST OF BIRDS COLLECTED BY M. A. BOUCARD IN THE STATE OF OAXACA IN SOUTH-WESTERN MEXICO, WITH DESCRIPTIONS OF NEW SPECIES. BY PHILIP LUTLEY SCLATER, M.A., SECRETARY TO THE SOCIETY.

M. Sallé having kindly submitted to my examination several collections of birds formed by his correspondent M. Adolphe Boucard in various parts of the State of Oaxaca in Southern Mexico during the past eighteen months, I am induced to bring before the Society a list of the species included in them, together with the localities in which they were obtained, at the same time giving characters of no less than twelve amongst them, which, as far as I have been able to ascertain, are hitherto undescribed. Science is greatly indebted to

M. Boucard for the energetic way in which he has worked out the ornithology of Southern Mexico; and, taking his discoveries in connexion with those of M. Sallé himself, Signor Botteri, and Señor R. M. de Oca, we may soon hope to attain a tolerably perfect knowledge of the aspect of the Avi-fauna of this region.

Totontepec, Teotalcingo, Choapam, &c., are villages of more or less importance, as M. Sallé informs me, situated in the mountains of Oaxaca, in the district of Villa Alta. Playa Vicente is a *rancheria* consisting of a group of cabins of bamboo, situated on the confines of the three States of Vera Cruz, Oaxaca, and Tehuantepec on the borders of the Rio Tesechoacan at the foot of the mountains of Oaxaca in the hot country (*tierra caliente*). Here the river first becomes navigable; and at this point, during the war of Independence, the cochineals of Oaxaca destined for Europe were embarked for transportation to Alvarado, the port on the Gulf of Mexico.

#### Fam. TURDIDÆ.

##### 1. CATHARUS MELPOMENE, Cab.

Totontepec (Jan.).

##### 2. CATHARUS OCCIDENTALIS, Sclater, P. Z. S. 1859, p. 323.

Totontepec (Jan.). Described, from the specimens contained in this collection, in my Review of the *Turdidæ* (*anteà*, p. 321), where the synonymy and characters of all the species of this family are given.

##### 3. TURDUS INFUSCATUS, Lafr. R. Z. 1844, p. 41.

Totontepec (Jan.).

##### 4. TURDUS GRAYII, Bp.

Choapam and Villa Alta.

##### 5. TURDUS ASSIMILIS, Cab.

Juquila and Teotalcingo. Rather darker in plumage than specimens from Jalapa, and so resembling somewhat the Guatemalan *T. leucauchen*. Eggs of this bird from Oaxaca are like pale varieties of those of our Blackbird (*Turdus merula*), being of a pale-greenish white, spotted and freckled with two shades of rufous. They measure 1.1 by 0.75.

##### 6. CALEOSOPTES CAROLINENSIS (Linn.).

Totontepec and Playa Vicente.

##### 7. MELANOTIS CÆRULESCENS (Sw.); *anteà*, p. 337.

Talea, Juquila, Villa Alta (Jan.), and Totontepec (Feb.).

##### 8. HARPORHYNCHUS CURVIROSTRIS (Sw.); P.Z.S. 1859, p. 339.

Oaxaca. Females are not so much variegated on the breast. The bird seems to agree with Eastern Mexican specimens.



## Fam. SYLVIIDÆ.

9. *SIALIA WILSONI*, Sw.

Juquila.

10. *REGULUS CALENDULA* (Linn.).

Talea.

## Fam. TROGLODYTIDÆ.

✓ 11. *CAMPYLORHYNCHUS MEGALOPTERUS* (Lafr.) ; P.Z.S. 1857, p. 298.

Llano verde. Sexes alike.

✓ 12. *CAMPYLORHYNCHUS CAPISTRATUS* (Less.).

Juquila and Playa Vicente. ♂ et ♀ similes.

✓ 13. *CAMPYLORHYNCHUS JOCOSUS*, sp. nov.

*Sordide brunneus, capite colloque nigricantioribus, superciliis latis et maculis interscapulii tectricumque alarium triangularibus albis ; alis caudaque nigricanti-fuscis, remigum rectricumque pogoniis externis maculis quadrangularibus sordide albis regulariter transvittatis ; cauda fusco terminata, et nisi in rectricibus mediis fascia subapicali lata alba : subtus albus, maculis rotundis nigris frequenter aspersus, gula immaculata : rostro et pedibus nigris.*

Long. tota 6·6, alæ 2·8, caudæ 2·4, rostri a rictu 1·1, tarsi 0·9.

*Hab.* In statu Oaxaca reipubl. Mexicanæ.*Mus.* P. L. S.

Two specimens of this apparently new species of *Campylorhynchus* were procured by M. Boucard at Oaxaca in March 1858. They are of different sexes, but present no outward distinctions. The bird is most nearly allied to *C. brunneicapillus* of Northern Mexico, but differs in its smaller size, shorter wings, and the shape of the spots below, which are rounded instead of being elongated. The upper surfaces of the two species are not dissimilar.

14. *SALPINCTES OBSOLETUS* (Say) : Baird, Report, p. 3.

Oaxaca (May). ♂ et ♀.

15. *THRYOTHORUS FELIX*, sp. nov.

*Murino-fuscus, pileo frontem versus rufo : loris et capitis lateribus albo nigroque striatis : subtus cinnamomeo-rufescens, ventre medio pallidiore, gutture albo ; crisso nigro transvittato : cauda pallide murina, nigricante regulariter transfasciata : rostro nigricanti-plumbeo, tomiis et apice pallidis : pedibus plumbeis.*

Long. tota 5·0, alæ 2·2, caudæ 2·1.

*Hab.* In statu Oaxaca, reipubl. Mexicanæ.

A specimen of this *Thryothorus* was obtained by M. Boucard at Juquila in May last. It is something like *T. rufalbus* (Lafr.), but

is smaller in size, and has no bars on the wings (these being edged outwardly like the back, only slightly more rufescent in tinge), and is pale rufous below instead of white. It seems to be distinct from any described species.

16. *THRYOTHORUS MACULIPECTUS*, Lafr.

Teotalcingo (March).

17. *THRYOTHORUS BEWICKII* (Aud.): Baird, Rep. p. 363.

Oaxaca.

18. *TROGLODYTES BRUNNEICOLLIS*, Sclater, P.Z.S. 1858, p. 297.

Cinco Señores, ♂ (Feb.).

19. *TROGLODYTES* — ? —.

Four specimens of a species of Wren which I have hitherto referred to *T. aëdon* of N. America. The recurrence of examples in the same plumage, differing from that of *T. aëdon* in being of a pale rufous tinge below, inclines me to think that it is really a distinct species.

20. *CYPHORINUS PROSTHELEUCUS*, Sclater.

Llano Verde and Playa Vicente.

21. *CYPHORINUS PUSILLUS*, sp. nov.

*Murino-brunneus, loris et superciliis posticis albis: secundariis extus et cauda nigro obsolete transfasciatis: regione auriculari albo variegata: subtus albus, lateraliter cinerascens tinctus, hypochondriis, ventre imo et crisso pallide brunneis: rostro superiore plumbeo, inferiore albido: pedibus pallide corylinis: cauda brevissima: tarsis elongatis.*

Long. tota 3·5, alæ 1·75, caudæ 1·1, rostri a rictu 0·7, tarsi 0·75.

*Hab.* In statu Oaxaca, reipubl. Mexicanæ.

*Mus.* P. L. S.

Four examples of this Wren were procured at Playa Vicente in May last. The sexes are similarly coloured. The bird belongs to a smaller and weaker form of *Cyphorinus*, as distinguished by its compressed lengthened and incurved bill, short tail, and long tarsi, and is congeneric with the preceding species, though perhaps both are strictly divisible from *C. thoracicus* and *C. cantans*.

Fam. *CERTHIIDÆ*.

22. *CERTHIA MEXICANA*, Reichenb.

Cinco Señores.

Fam. *ALAUDIDÆ*.

23. *OTOCORYS CHRYSOLÆMA* (Wagler).

Oaxaca: several specimens. A male, killed in March in full summer plumage, does not seem different from Californian examples of

*O. occidentalis*. Perhaps Prof. Baird may be right in uniting all the N. American birds under *O. cornuta*; but there is great difference in size between Eastern and Western birds.

Fam. PARIDÆ.

24. *LOPHOPHANES WOLLWEBERI* (Bp.): P. Z. S. 1857, p. 299.  
Talea.

25. *SITTA CAROLINENSIS*, Linn.

Cinco Señores. Smaller than examples from Vera Cruz: see *anted*, p. 363, and P. Z. S. 1857, p. 300.

26. *POLIOPTILA MEXICANA*, Bp.?

Four examples: Oaxaca (March). I am still doubtful about this species, whether it is anything more than *P. cærulea* in winter plumage. One example, marked *male*, shows traces of the black front-band.

Fam. MNIOTILTIDÆ.

27. *SIURUS LUDOVICIANUS*, Bp.; Baird, Rep. p. 262.  
Totontepec (Jan.).

28. *MNIOTILTA VARIA* (Linn.).  
Juquila and Totontepec.

29. *PARULA SUPERCILIOSA* (Hartl.): P. Z. S. 1857, p. 299.  
Talea.

30. *GEOTHLYPIS TRICHAS* (Linn.): Baird, Rep. p. 241.  
Totontepec and Oaxaca.

31. *GEOTHLYPIS MACGILLIVRAII* (Aud.): Baird, Rep. p. 244.  
Choapam (Feb. 1859); Cinco Señores (Feb.). Males in full plumage, and females.

32. *HELMINTHOPHAGA RUFICAPILLA* (Wils.): Baird, Rep. p. 256.  
♂ adult et juv. Oaxaca (Feb.).

33. *HELMINTHOPHAGA CELATA* (Say): Baird, Rep. p. 257.  
♀ Oaxaca and Cinco Señores. One specimen is curiously clouded with dark colour. The other shows traces of the vertical spot.

34. *HELMINTHOPHAGA PEREGRINA* (Wils.): Baird, Rep. p. 258.  
In a state of plumage which I believe to be the winter dress of this species.

35. *DENDROICA VIRENS* (Gm.).  
Talea and Playa Vicente (April).

## 36. DENDROICA TOWNSENDI (Aud.).

Totontepec (Jan.).

## 37. DENDROICA NIGRESCENS (Towns.).

Oaxaca (March), ♂. A male in winter plumage, with the throat white, the black just beginning to appear.

## 38. DENDROICA ICTEROCEPHALA (Linn.).

Playa Vicente (April). ♂, in fine plumage.

## 39. DENDROICA MACULOSA (Gm.).

Playa Vicente. ♂, in fine plumage.

## 40. DENDROICA SUPERCILIOSA (Bodd.): Baird, Rep. p. 289.

Oaxaca. ♂, in good plumage.

## 41. MYIODIOCTES PUSILLUS (Wils.).

Totontepec and Villa Alta.

42. BASILEUTERUS BELLI (Giraud).—*Muscicapa belli*, Giraud, B. Texas, pl. 7.—*B. chrysophrys*, Bp. Consp. p. 314; P. Z. S. 1857, p. 202.

Llano Verde and Totontepec.

43. BASILEUTERUS BRASIERI (Giraud).—*Muscicapa brasieri*, Giraud, B. Texas, pl. 12.—*B. culicivorus*, Bp. Consp. p. 313.

Teotalcingo.

## 44. SETOPHAGA PICTA, Sw.

Cinco Señores.

## 45. SETOPHAGA MINIATA, Sw.

Cinco Señores and Totontepec.

## 46. SETOPHAGA RUTICILLA.

Playa Vicente (March and April).

## 47. CARDELLINA RUBRA (Sw.): P. Z. S. 1856, p. 292.

Llano Verde and Totontepec.

## 48. CARDELLINA RUBRIFRONS, Giraud; P. Z. S. 1857, p. 299.

Cinco Señores.

## 49. GRANATELLUS SALLÆI, Sclater, P. Z. S. 1856, p. 292, pl. 120.

♂. *Cærulescenti-plumbeus, litura post-oculari alba, abdomine medio cum crisso rosaceo-rubris, lateribus albis.*

♀. *Fuscescenti-plumbea, fronte et litura post-oculari rufis: sub-tus cinnamomeo-rufescens, gutture et ventre medio dilutioribus, albescentibus: pedibus pallidis.*



I have repeated the characters of the male of this interesting species in order to add those of the female, which M. Boucard has now forwarded with another male specimen from Playa Vicente. *Granatellus venustus* (Bp. Consp. p. 312), of which M. DuBus has kindly sent me a figure, is a closely-allied species, but easily known by its white throat and narrow black breast-band, and white terminations to the external tail-feathers. There is an imperfect specimen of the latter bird in the British Museum.

Fam. LANIIDÆ.

50. *LANIUS MEXICANUS*, Brehm, Cab. Journ. f. Orn. ii. p. 145.  
—*L. excubitoroides*, Baird, Rep. p. 327?

Four examples, ♂ and ♀: Oaxaca (Feb. and March 1858).

In the absence of specimens for comparison, I think it best to refer this species to Brehm's *L. mexicanus*, though my impression is that it does not differ from *L. excubitoroides*, as described by Baird. This is the most southern point in the New World at which *Lanius* has yet been noticed.

Fam. VIREONIDÆ.

51. *ICTERIA VELASQUEZI*, Bp.

Playa Vicente.

52. *VIREO SOLITARIUS*, Vieill.

Talea.

53. *VIREOSYLVA FLAVOVIRIDIS*, Cassin.

Playa Vicente (April).

54. *HYLOPHILUS OCHRACEICEPS*, sp. nov.

*Olivacescenti-fuscus, pileo rufescenti-ochraceo, alis nigricantibus pallido brunneo extus limbatis; cauda pallide brunnea: subtus pallide flavicans, gutture grisescenti-albo, pectore et lateribus ochracescenti-fuscis: rostro pallide corneo, pedibus pallide corylinis.*

Long. tota 4·3, alæ 2·2, caudæ 1·5, tarsi 0·65.

*Hab.* In statu Oaxaca reipubl. Mexicanæ.

*Mus.* P. L. S.

This is the only species of the little genus *Hylophilus* I have yet seen from the country north of Panama. It is tolerably typical in form, the bill being rather longer and more slender than in *H. pæcilotis*, and the tail longer. The first primary is short (0·8 inch from the insertion); the fourth, fifth, and sixth nearly equal and longest. Two examples, obtained at Playa Vicente in April 1859, of different sexes, are coloured alike.

## Fam. HIRUNDINIDÆ.

55. PETROCHELIDON SWAINSONI, Sclater, P. Z. S. 1858, p. 296.

Oaxaca: ♂ et ♀ similes. Two pairs of this very beautiful Swallow quite confirm the validity of this species as distinct from *P. lunifrons* and *P. fulva*.

## Fam. AMPELIDÆ.

56. PTILOGONYS CINEREUS (Sw.).

Totontepec (Jan.). The eggs of this bird, sent by M. Boucard from Oaxaca (May 1858), are minutely freckled and striated with brownish ash-colour on a white ground, the markings being denser and forming a ring round the large end. They measure .875 by .61 inch. They somewhat resemble some varieties of those of *Anthus pratensis*.

57. MYIADESTES OBSCURUS (Lafr.).

Totontepec (Jan.).

M. Boucard has forwarded five eggs belonging to this bird, taken at Yoletpec in May 1858. They are very Robin-like in appearance, being white, minutely spotted and freckled with reddish brown, particularly at the larger end, where the spots cover nearly the entire surface. They measure 0.95 by 0.75 inch.

## Fam. CÆREBIDÆ.

58. CERTHIOLA MEXICANA, Sclater, P. Z. S. 1856, p. 286.

Playa Vicente.

59. CÆREBA CARNEIPES, sp. nov.?

*Cæreba cyanea*, Sclater, P. Z. S. 1856, p. 286.

*Assimilis C. cyanæ, ex Cayenna, et rostro brevior, tenuior, pilei colore turcoso magis restricto, nucha cum lateribus capitis concolore, et pedibus vivide carneis specificè vix distinguenda.*

*Hab.* In rep. Mexicana.

There seem to be minute differences which always distinguish this bird from its S. American representative, though it is questionable whether they are sufficient for specific separation. The present examples were obtained at Playa Vicente. M. Sallé procured others at Cordova. I have not yet seen examples of this bird from Guatemala.

60. DIGLOSSA BARITULA, Wagl.

Juquila and Totontepec.

## Fam. TANAGRIDÆ.

61. PITYLUS POLIOGASTER, DuBus.

Choapam (Feb.); Teotalcingo (March); Playa Vicente (April and May).

62. *SALTATOR ATRICEPS*, Less.

Playa Vicente.

63. *SALTATOR MAGNOIDES*, Lafr.

Playa Vicente (May).

64. *SALTATOR GRANDIS* (Licht.).

Playa Vicente (May).

65. *ARREMON AURANTIROSTRIS*, Lafr. : P. Z. S. 1856, p. 83.

Playa Vicente. Two males and a female of this beautiful species. The vertical band in the male is cinereous, and bend of the wing orange. The female is less decidedly coloured,—the vertical band being olivaceous like the back, sides and flanks more greenish, and belly not pure white. I had supposed this *Arremon* to be from Panama, much further south; but, besides these examples, I have also lately met with specimens from Guatemala, in the collections forwarded by Mr. Salvin.

66. *BUARREMON ALBINUCHUS* (d'Orb. and Lafr.).

Totontepec.

67. *BUARREMON BRUNNEINUCHUS* (Lafr.).

Teotalcingo (March). Mexican and New Granadian specimens seem to be really identical.

68. *CHLOROSPINGUS OPHTHALMICUS*, DuBus.

Totontepec (Jan.).

69. *PHÆNICOTHRAUPIS RUBICOIDES* (Lafr.).

Playa Vicente (May).

70. *PYRANGA ERYTHROCEPHALA* (Sw.) : Sclater, P. Z. S. 1856, p. 125.

Juquila; Totontepec.

71. *PYRANGA LUDOVICIANA* (Wils.).

Oaxaca (March).

72. *PYRANGA HEPATICA*, Sw.

Talea (♂ et ♀), Villa Alta, and Choapam.

73. *PYRANGA ÆSTIVA* (Gm.).

Playa Vicente.

74. *RAMPHOCELUS SANGUINOLENTUS* (Less.).

Playa Vicente (March and April).

## 75. TANAGRA ABBAS, Licht.

Teotalcingo and Villa Alta.

## 76. EUPHONIA HIRUNDINACEA, Bp.

Playa Vicente (March).

## 76\*. EUPHONIA ELEGANTISSIMA (Bp.).

Eggs of this bird, taken at Juquila in Oaxaca in May, are rounded in shape, and of a creamy white with a few scattered spots and blotches, principally at the larger end, of two shades of brown. They measure .65 by .5 inch. They are the first authentic specimens of the eggs of any *Euphonia* that I have seen.

## Fam. FRINGILLIDÆ.

## 77. CARDINALIS VIRGINIANUS, Bp.

Playa Vicente (May) ♂. In fine plumage.

## 78. GUIRACA CÆRULEA (Linn.).

Oaxaca (Sept. 1858).

## 79. GUIRACA CONCRETA (DuBus).

Playa Vicente (April), ♂ et ♀.

♀ *Saturate cafee-brunnea, unicolor, subtus vix dilutior: alarum et caudæ plumis intus nigricantibus, rostro et pedibus nigris.*

Long. tota 6.5, alæ 3.2, caudæ 2.2.

I am not aware that the female of this bird has been hitherto noticed.

## 80. GUIRACA PARELLINA, Bp. Consp. p. 502.

Totontepec (Jan. and March), ♂ et ♀.

## 81. ORYZOBORUS FUNEREUS, sp. nov.

*Coracino-niger unicolor, subalaribus, campterio et speculo alari, alula spuria oblecta, albis: rostro nigro, pedibus fusciscenti-nigris.*

Long. tota 8.8, alæ 2.2, caudæ 2.1, rostri a fronte .45, rostri altitudo .45.

*Hab.* In statu Oaxaca, reipubl. Mexicanæ.

*Mus.* P. L. S.

This little black Finch agrees in the structure of the bill with *Oryzoborus crassirostris*, and I have therefore referred it to that genus. M. Boucard's example was collected at Suchapam in April 1859. I have never seen it before, and cannot make it agree with any described species.

## 82. SPERMOPHILA MORELETI, Puch.: Bp. Consp. p. 497.

Playa Vicente (May 1859).



## 83. SPERMOPHILA CORVINA, sp. nov.

*Coracino-nigra, speculo alari parvo et tectricibus subalaribus albis, rostro et pedibus nigris.*

Long. tota 4.4, alæ 2.2, caudæ 2.0, rostri altitudo .3.

*Hab.* In statu Oaxaca reipubl. Mexicanæ (Boucard), et in rep. Honduras.

*Mus.* P. L. S.

I have had a specimen of this bird in my collection for some time, purchased along with other birds from Honduras, but I never felt certain about the locality. Two examples were obtained by M. Boucard at Playa Vicente in April 1859. The beak is much smaller than in the previous species, and has the culmen incurved as in *Spermophila*.

## 84. CYANOSPIZA CIRIS (Linn.).

Playa Vicente, ♂ (April 1859).

## 85. CYANOSPIZA CYANEA (Linn.).

Playa Vicente, Totontepec, and Oaxaca.

## 86. CYANOSPIZA VERSICOLOR (Bp.).

Oaxaca.

## 87. PHONIPARA PUSILLA (Sw.).

Totontepec (Jan.).

## 88. POECETES GRAMINEUS (Gm.): Baird, Rep. p. 447.

Four examples: Oaxaca (March).

I cannot distinguish between these and specimens from the U. S., except that the present are rather purer in colouring, and in particular more white below.

## 89. COTURNICULUS PASSERINUS, Bp.

Oaxaca (March), ♂.

## 90. CHONDESTES GRAMMACA (Say).

Oaxaca, ♂ et ♀.

## 91. ZONOTRICHIA MYSTACALIS, Hartl.

Four examples, ♂ et ♀, Oaxaca (March). Sexes nearly alike; female rather less strongly coloured.

## 92. SPIZELLA PALLIDA (Sw.): Baird, Rep. p. 474.

Oaxaca (March), ♂ et ♀.

These examples seem to agree with my specimens of *S. pallida*. I do not possess examples of *S. breweri*.

## 93. MELOSPIZA LINCOLNI (Aud.): Baird, Rep. p. 82.

Totontepec, Teotalcingo, and Oaxaca.

94. *PEUCÆA RUFICEPS*, Baird ?; Baird, Rep. p. 486.—*Ammodramus ruficeps*, Cassin.

Three examples, Oaxaca (March 1858). I have no examples of *Peucea ruficeps* of California, and am consequently unable to say positively that this is the same bird, the species in this group of Finches requiring a close comparison. In my own collection are three specimens of this same species of *Peucea* obtained by Botteri at Orizaba.

95. *ATLAPETES PILEATUS*, Wagler: Sclater, P. Z. S. 1857, p. 304.  
State of Oaxaca.

96. *EMBERNAGRA RUFIVIRGATA*, Lawr.  
Playa Vicente (April 1859).

97. *HÆMOPHILA RUFESCENS*, Sw.?  
Juquila and Villa Alta (Jan.).

98. *PIPILO MACULATUS*, Sw.  
Cinco Señores.

99. *PIPILO ALBICOLLIS*, Sclater, P. Z. S. 1858, p. 304.  
Totontepec (Jan.) and Oaxaca.

100. *CHRYSOMITRIS MEXICANA*, Sw.  
Totontepec (Jan.).

101. *CHRYSOMITRIS NOTATA*, DuBus.  
Totontepec (Jan. and Feb.).

102. *CARPODACUS HÆMORRHOUS* (Wagl.).  
Oaxaca, many examples, ♂ et ♀.

#### Fam. ICTERIDÆ.

103. *OSTINOPS MONTEZUMÆ* (Less.).  
Playa Vicente.

104. *CASSICULUS MELANICTERUS*, Bp. Consp. p. 428.—*Ict. melanicterus*, Bp. Pr. Ac. Phil. iv. 389.  
♂ et ♀, Rio Grande.

105. *CASSICULUS PREVOSTI* (Less.).  
Teotalcingo and Playa Vicente.

106. *ICTERUS SPURIUS*, Bp.?

Playa Vicente (March). I find much difference in the size of Mexican specimens of these birds, and am inclined to agree with Prof. Baird that *I. affinis* is not a really distinct species.

107. *ICTERUS AUDUBONI*, Baird, Rep. p. 542.

Juquila.

108. *ICTERUS WAGLERI*, Sclater : Baird, Rep. p. 545.

Villa Alta (Jan.) ; Oaxaca (March).

109. *AGELÆUS PHENICEUS* (Linn.).

Oaxaca. Called 'el Collegial.'

110. *MOLOTHRUS ÆNEUS*.

Yetla (Feb.).

111. *STURNELLA HIPPOCREPIS*, Wagl. ?

Oaxaca.

112. *QUISCALUS SUMICHRASTI*, de Sauss., *antea*, p. 365.

Playa Vicente (May).

#### Fam. CORVIDÆ.

113. *CYANURA CORONATA* (Sw.) : P. Z. S. 1857, p. 302.

Juquila.

114. *CYANOCITTA CALIFORNICA* (Vig.) : Baird, Rep. p. 584.

Cinco Señores. Seems to agree with a specimen from San Francisco : female smaller.

115. *CYANOCITTA ORNATA* (Less.).

Teotalcingo.

116. *CYANOCITTA NANA*, DuBus, Esq. Orn. pl. 25 ; P. Z. S. 1857, p. 204.

Llano Verde.

117. *CALOCITTA FORMOSA* (Sw.).—*Pica formosa*, Sw. Phil. Mag. 1827, p. 437.—*Pica bullockii*, Wagl.

The front of this example is white, and the pectoral band rather broader than in Guatemalan specimens, and the nape has rather more black.

#### Fam. DENDROCOLAPTIDÆ.

118. *PICOLAPTES AFFINIS*, Lafr. R. Z. 1850, p. 275.

Totontepec (Jan.).

119. *DENDRORNIS FLAVIGASTRA* (Sw.) : P. Z. S. 1856, p. 289.

Playa Vicente (April).

120. *DENDRORNIS ERYTHROPYGIA*, Sclater, *antea*, p. 366.

Oaxaca.

## 121. DENDROMANES ANABATINUS.

*Dendrocincla anabatina*, Sclater, P. Z. S. 1859, p. 54, pl. 150 ; Ibis, 1859, p. 118.

Playa Vicente (April).

The peculiar form of the beak in this and the following species seems to necessitate the formation of a new generic name for them, which I accordingly propose shall be *Dendromanes*. This organ is short, straight, and much compressed, though somewhat broad at the base, but not sufficiently to enable us to arrange it with *Dendrocincla* or *Dendrocops*, as I have previously done. In fact it more resembles that of some species of *Dendroornis*, though so much shorter, smaller, and with the tip more incurved. The stiff spiny tail shows at once that its natural situation is in the subfamily *Dendrocolaptinæ*. The following is an outline of the characters of this new form of *Dendrocolaptinæ* :—

*Rostrum capite vix longius, rectum, subulatum, compressum, ad basin paulum dilatatum, mandibulæ superioris apice uncinato: alæ subbreves, dimidium caudæ superantes, remigibus tertio quarto et quinto longissimis: cauda spinosa, plumarum rachibus denudatis et acutis: pedes scansorii, unguibus acutis.*

## 122. DENDROMANES HOMOCHROUS, sp. nov.

*Fusco-rubiginosus, unicolor, gula dilutiore, alis caudaque vegetioribus; loris grisescenti-rufis; remigum sex externorum pogoniis internis nigricante terminatis: rostro fuscescenti-corneo, pedibus pallide corylinis.*

Long. tota 7·5, alæ 3·8, caudæ 3·2, rostri a rictu 1·0, tarsi 1·0.

*Hab.* In statu Oaxacensi reipubl. Mexicanæ.

*Mus.* P. L. S.

Only one example of the present bird was in M. Sallé's collections—a male obtained by M. Boucard at Teotalcingo in March 1859. In form it precisely resembles the last species, having only the tail a trifle longer, but just as much rounded, and with the shafts spiny and projecting. The fourth and fifth primaries are equal and rather longer than the third. The sixth is longer than the second.

## 122\*. XENOPS MEXICANUS, Sclater, P. Z. S. 1856, p. 289.

Playa Vicente (April).

## 123. SYNALLAXIS ERYTHROTHORAX, Sclater.

Playa Vicente (March and April).

## 124. ANABATES CERVINIGULARIS, Sclater.

Playa Vicente (April).

## 125. ANABAZENOPS VARIEGATICEPS, Sclater, P. Z. S. 1856, p. 289.

Choapam and Totontepec.



## Fam. FORMICARIIDÆ.

126. *THAMNOPHILUS DOLIATUS* (Linn.).

Choapam and Playa Vicente.

127. *THAMNOPHILUS MELANURUS*, Gould?

Playa Vicente (May 1859), ♀.

128. *FORMICIVORA BOUCARDI*, Sclater, P. Z. S. 1858, p. 301.

Playa Vicente (March), ♂ et ♀.

I have already described the female of this species, now sent along with the male by M. Boucard, among the birds collected in Honduras by Mr. Leyland (P. Z. S. 1859, p. 55).

129. *CERCOMACRA TYRANNINA*, Sclater, P. Z. S. 1858, p. 245, et 1859, p. 55.

Playa Vicente (May), two pairs. I have again compared these with New Granadian specimens without finding any material difference.

130. *RAMPHOCÆNUS RUFIVENTRIS* (Bp.).

Playa Vicente (April).

Rather more rufous below than in specimens from New Granada (S. Martha).

131. *FORMICARIUS MONILIGER*, Sclater, P. Z. S. 1856, p. 294.

Playa Vicente (March).

132. *GRALLARIA GUATEMALENSIS*, Prévost.

Playa Vicente. More darkly coloured below than examples from Vera Cruz, but not so intense as in a Guatemalan specimen in my possession.

## Fam. TYRANNIDÆ.

133. *ATTILA CITREOPYGIUS*, Bp.

Two examples, ♂, Playa Vicente.

134. *SAYORNIS NIGRICANS*, Sw.

Oaxaca (March); Cinco Señores (Feb.).

135. *MYIODYNASTES LUTEIVENTRIS*, Sclater, P. Z. S. 1859, p. 42.

Juquila.

136. *TYRANNUS INTREPIDUS*, Vieill.

Playa Vicente (May).

137. *TYRANNUS VOCIFERANS*, Sw.

Oaxaca (Feb.).

138. *MILVULUS MONACHUS*, Hartl.

Playa Vicente.

139. *MYIARCHUS LAWRENCII* (Giraud).

Talea. Eggs of this bird from this locality are of a pure white, with spots of two shades of brown principally towards the larger end, where they form a ring. They seem small for the size of the bird, measuring only 0·7 by ·525 inch.

140. *MYIARCHUS COOPERI*, Baird, Rep. p. 180.

Oaxaca, ♂ (March 1858).

141. *MYIARCHUS CINERASCENS* (Lawr.).

Oaxaca, ♂ (March 1858).

142. *CONTOPUS BOREALIS* (Sw.).

Cinco Señores (Feb.), ♀.

143. *EMPIDONAX MINIMUS*, Baird.

Playa Vicente (April).

144. *MITREPHORUS PHÆOCERCUS*, Sclater, P. Z. S. 1859, p. 44.

Talea.

145. *MYIOBIUS SULPHUREIPYGIUS*, Sclater, P. Z. S. 1856, p. 296.

Playa Vicente (May).

146. *CYCLORHYNCHUS CINEREICEPS*, Sclater, Ibis, 1859, p. 443.

Playa Vicente (March 1859).

147. *PLATYRHYNCHUS CANCROMA* (Licht.): Sclater, P. Z. S. 1856, p. 295.

Playa Vicente (May).

148. *TODIROSTRUM SCHISTACEICEPS*, Sclater, Ibis, 1859, p. 444.

Playa Vicente.

149. *TODIROSTRUM CINEREIGULARE*, Sclater, P. Z. S. 1856, p. 295.

Teotalcingo and Playa Vicente.

150. *LEPTOPOGON AMAUROCEPHALUS*, Cab.

Playa Vicente.

#### Fam. COTINGIDÆ.

151. *TITYRA ALBITORQUES*, DuBus; Sclater, P. Z. S. 1857, p. 71.

Playa Vicente, one example, ♀. I am surprised at finding this Becard so far north, and should like to examine more specimens of

both sexes, as it may prove to be distinct from the New Granadian species.

152. *TITYRA PERSONATA*, Jard.

Playa Vicente.

153. *PLATYPSARIS AGLAÏÆ* (Lafr.): Slater, P. Z. S. 1857, p. 74.

This specimen belongs to the dark variety (?), considered by MM. Elliot and Verreaux to be the true *P. aglaïæ* in contradistinction to the *P. affinis* of the former. See 'Ibis,' 1859, p. 394; and above, p. 366.

154. *LIPAUGUS UNIRUFUS*, sp. nov.

*Fuscescenti-rufus unicolor, subtus paulo dilutior, præcipue in gutture et ventre medio: remigibus alarum intus obscurioribus: rostro pallescente corneo, mandibulæ inferioris basi albicante; pedibus fusco-cinereis.*

Long. tota 9·75, alæ 5·4, caudæ 4·3.

*Hab.* In statu Oaxacensis Mex. Merid. (Boucard); in rep. Guatemalensi (Skinner).

*Mus.* Brit. et P. L. S.

This fine large *Lipaugus* is readily distinguishable from every other species of the genus by its size and colour. Besides the present example (a male, obtained by M. Boucard at Playa Vicente in March 1859), I have noticed a specimen in the British Museum, which was received in Mr. Skinner's collections from the province of Vera Paz in Guatemala. Mr. Salvin has also lately forwarded a specimen collected at Coban.

155. *MANACUS CANDÆI* (Parzud.).

Playa Vicente, ♂ et ♀.

156. *PIPRA MENTALIS*, Slater.

Playa Vicente, ♂ et ♀.

Fam. TROCHILIDÆ.

157. *PHAËTHORNIS ADOLPHI*, Gould.

Teotalcingo (March 1859); Playa Vicente (April).

158. *LAMPORNIS PREVOSTI* (Bourc. & Muls.).

Choapam (March 1859).

159. *CAMPYLOPTERUS PAMPA* (Less.).

Teotalcingo. Found breeding in March, and nest and eggs received by M. Sallé.

160. *CAMPYLOPTERUS DELATRII* (Less.).

Teotalcingo.

161. *CÆLIGENA FULGENS* (Sw.).

Totontepec (Jan. 1859).

162. *DELATTRIA HENRICI* (Less.).

Totontepec.

163. *PETASOPHORA THALASSINA* (Sw.).

Totontepec (Jan. 1859).

164. *SAPPHIRONIA LUCIDA* (Shaw).

Totontepec (Feb.).

165. *THAUMANTIAS CANDIDUS* (Bourc.).

Playa Vicente (May).

166. *CYANOMYIA VIOLICEPS*, Gould, Ann. & Mag. N. H. 3 ser. iv. p. 97.

Described from M. Boucard's specimens.

167. *CYANOMYIA QUADRICOLOR* (Vieill.).

Found breeding at Choapam in the month of March, and nest and eggs transmitted to M. Sallé by M. Boucard.

168. *CYANOMYIA SORDIDA*, Gould, Ann. & Mag. Nat. Hist. 3 ser. iv. p. 97.

Oaxaca.

169. *AMAZILIUS CORALLIROSTRIS* (Bourc.).

State of Oaxaca.

170. *AMAZILIUS ARSINOË* (Less.).

Playa Vicente (April).

171. *AMAZILIUS DUBUSI*, Bourc. & Muls. Ann. Soc. Lyons, 1852.

Choapam (March); Playa Vicente (April). Is this distinct from *A. riefferi*?

172. *TROCHILUS COLUBRIS*, Linn.

Oaxaca.

173. *SELASPHORUS HELOÏSÆ* (Less. & Del.).

Totontepec (Jan. 1859).

174. *CALOTHORAX PULCHRA*, Gould, Ann. & Mag. Nat. Hist. 3 ser. iv. p. 97.

Oaxaca.



## Fam. GALBULIDÆ.

175. *GALBULA MELANOGENIA*, Slater.

Playa Vicente (April).

This is the most northern locality I have yet become acquainted with for *Galbula*. The specimen is marked male, but is in female plumage, being perhaps immature.

## Fam. ALCEDINIDÆ.

176. *CERYLE SUPERCILIOSA* (Linn.).

Playa Vicente (April), ♂ et ♀.

## Fam. MOMOTIDÆ.

177. *MOMOTUS MEXICANUS*, Sw. Phil. Mag. 1827, p. 442 ;  
Slater, P. Z. S. 1857, p. 253.

Rio Grande.

178. *MOMOTUS LESSONI*, Less.

Playa Vicente and Teotalcingo.

179. *HYLOMANES MOMOTULA*, Licht.

Playa Vicente (April 1859).

## Fam. TROGONIDÆ.

180. *TROGON MEXICANUS*, Sw. : Gould, Mon. pl. 1.

Cinco Señores.

181. *TROGON AMBIGUUS*, Gould, Mon. pl. 4.

Talea.

182. *TROGON CALIGATUS*, Gould, Mon. pl. 7.

Playa Vicente.

183. *TROGON MELANOCEPHALUS*, Gould, Mon. pl. 12.

Playa Vicente, ♂ et ♀.

184. *TROGON MASSENA*, Gould, Mon. pl. 16.

Playa Vicente, ♂ et ♀.

185. *TROGON PUELLA*, Gould.

Playa Vicente.

## Fam. CUCULIDÆ.

186. *GEOCOCCYX AFFINIS*, Hartl.

Juquila.

187. *PIAYA MEXICANA* (Sw.).—*Cuculus mexicanus*, Sw. Phil. Mag. 1827, p. 440.

♂ Juquila (May 1858). This is a different species of *Piaya* from that which inhabits the tierra caliente of Vera Cruz and Guatemala. The plumage is of a much brighter chestnut-red; the lower belly is hardly darker than the breast; and the tail-feathers are bright rufous, with a well-defined broad subapical band of black, tipped with white. In the common bird of Vera Cruz, which I have until lately supposed to be Swainson's *Cuculus mexicanus*, the tail-feathers, looking at them from below, are nearly black, and have *no* defined patch towards their termination as in the present bird, and the lower belly is altogether black. See *antea*, p. 368, for description of *Piaya thermophila*.

188. *CROTOPHAGA SULCIROSTRIS*, Sw.

Oaxaca.

Fam. RHAMPHASTIDÆ.

189. *RHAMPHASTOS CARINATUS*, Sw.

Playa Vicente (March).

190. *PTEROGLOSSUS TORQUATUS* (Wagl.).

Playa Vicente (March).

191. *AULACORHAMPHUS WAGLERI*.

Xacatepec, ♂ (March 1858).

Fam. PICIDÆ.

192. *DRYOCOPUS GUATEMALENSIS*.

Llano Verde and Playa Vicente. Rather small in dimensions.

193. *PICUS VARIUS*, Linn.

Llano Verde; Totontepec (Jan.).

194. *PICUS JARDINII*, Malh.

Oaxaca, ♂.

195. *CHLORONERPES ÆRUGINOSUS* (Licht.).

Teotalcingo (March).

196. *CHLORONERPES OLEAGINEUS*.

Playa Vicente (March).

197. *CELEUS CASTANEUS* (Wagl.).

Playa Vicente (March).

Fam. PSITTACIDÆ.

198. *CONURUS ASTEC*, Souancé, Rev. Zool. 1857, p. 97.

Playa Vicente (April 1859).

199. *CHRYSOTIS OCHROPTERA* (Gm.): Gray, List of Psittacidæ, p. 79.

Rio Grande; Playa Vicente.

200. *CHRYSOTIS AUTUMNALIS* (Linn.).

Playa Vicente. I now doubt much whether Bonaparte's *C. æstivalis* is really distinct from this species. The only difference between the representatives of the two species in the British Museum is the presence of rather more red on the lores of the supposed true *C. autumnalis*, in which respect it agrees better with Edwards's plate, upon which the name was founded.

#### Fam. FALCONIDÆ.

201. *HERPETOTHERES CACHINNANS* (Linn.).

Playa Vicente.

202. *SPIZAËTUS ORNATUS* (Daud.).

Teotalcingo (March 1859).

203. *BUTEO BOREALIS* (Gm.).

In adult and immature plumage.

Talea and Oaxaca.

204. *BUTEO HARLANI*, Aud.

The variety of *B. borealis* alluded to in P. Z. S. 1857, p. 211.

Oaxaca.

205. *BUTEO ERYTHRONOTUS* (Lafr. et d'Orb.).

Talea.

206. *ASTURINA NITIDA*.

Talea and Playa Vicente.

207. *ACCIPITER PILEATUS* (Max.): Temm. Pl. Col. 205.

Adult male: Playa Vicente. This is the first specimen of *Accipiter pileatus* that Mr. Gurney has seen from the northern portion of the American continent, as he informs me.

208. *ACCIPITER COOPERI*, Bp.: Baird, Rep. p. 16.

Totontepec (Jan. 1859) and Oaxaca.

Decidedly distinct from the preceding (with which it is united by many authors—Strickland, Gray, &c.), in Mr. Gurney's opinion:—" *Accipiter pileatus* is distinguishable from *A. cooperi*, (1) by its smaller size; (2) by the whole-coloured hood with which its head is covered in all ages; (3) by the plumbeous colour of the breast and belly in the adult, the corresponding parts in *A. cooperi*, when adult, being rufous, mottled with white. The adult *A. pileatus* has the curious peculiarity of exactly resembling in colour the adult of *Har-*

*pagus bidentatus*. In the Norwich Museum are specimens of *A. pileatus* from Brazil; Ecuador, Pallatanga (*Fraser*); Chili, and Straits of Magellan,—and of *A. cooperi* from California, Monterey; Texas and Mexico, Orizava. The adult specimens of the present bird from Oaxaca show a whole-coloured hood nearly as dark as in *A. pileatus*, which younger specimens never do, whereas, as stated above, *A. pileatus* does so in all ages.”—J. H. G. in *epist.*

209. TINNUNCULUS SPARVERIUS (Linn.).

Villa Alta (Jan. 1859).

210. HYPOTRIORCHIS RUFIGULARIS (Daud.): Strickl. Orn. Syn. p. 88.

Playa Vicente.

211. ICTINIA PLUMBEA (Gm.).

Playa Vicente (March), ♂ adult.

212. CIRCUS HUDSONICUS (Linn.).

Oaxaca.

Fam. STRIGIDÆ.

213. STRIX PRATINCOLA, Bp.

Oaxaca.

214. BRACHYOTUS CASSINII, Brewer.

Oaxaca.

215. BUBO VIRGINIANUS (Gm.).

Oaxaca.

Fam. COLUMBIDÆ.

216. COLUMBA NIGRIROSTRIS, sp. nov.

*Obscure olivascenti-fusca æneo vix tincta, capite et collo supero cum corpore subtus et tectricibus subalaribus vinaceis, gula albescentiore, ventre plumbescentiore: remigibus et rectricibus fusco-nigricantibus unicoloribus: rostro nigro: pedibus coralino-rubris.*

Long. tota 10·5, alæ 6·5, caudæ 4·6.

*Hab.* In statu Oaxaca reipubl. Mexicanæ.

In spite of the number of new species that have lately been described among the Pigeons, this bird appears to have remained unnoticed. There is no specimen of it in the British Museum; and it is not included in Bonaparte's 'Conspectus,' which contains such an elaborate account of the family. I therefore consider it to be probably new. Its nearest allies are *Columba flavirostris*, which has the bill yellow, and *C. rufina*, which has a cinnamomeous-brown tail,

besides other differences. Its proper place is intermediate between these species.

217. *COLUMBA FLAVIROSTRIS*, Wagl.

Teotalcingo (March).

218. *LEPTOPTILA ALBIFRONS*, Bp. Consp. ii. p. 74.

Playa Vicente.

219. *GEOTRYGON ALBIFACIES*, G. R. Gray : Sclater, P. Z. S. 1858, p. 98.

Latani (Feb. 1859).

220. *PERISTERA CINEREA* (Temm.).

Playa Vicente.

221. *ZENAIDURA CAROLINENSIS* (Linn.).

Talea and Oaxaca.

222. *CHAMÆPELIA PASSERINA*, Linn.

Oaxaca ; several specimens.

223. *SCARDAFELLA INCA* (Less.).

Oaxaca. The egg of this species, forwarded by M. Sallé, measures 0·9 by 0·6 inch, and is of the usual uniform white.

#### Fam. CRACIDÆ.

224. *PENELOPE PURPURASCENS*, Wagler.

Rio Grande ; called 'Faisano.'

✓ 225. *ORTALIDA VETULA* (Wagl.).

Playa Vicente. I have never seen but two *Ortaliidæ* from Mexico—the two here mentioned. I can hardly believe that Baird's *O. maccallii* is different from the present bird.

226. *ORTALIDA LEUCOGASTRA*, Gould.

Rio Grande. The female like the male, but smaller. I have now little doubt that this is really the true *O. poliocephala* of Wagler. It seems to be the representative of *O. vetula* in the Pacific coast-region.

#### Fam. PERDICIDÆ.

227. *ODONTOPHORUS GUTTATUS*, Gould.

Teotalcingo (March 1859).

#### Fam. TINAMIDÆ.

228. *TINAMUS BOUCARDI*, Sallé, MS.

*Obscure cinereus ; dorso toto et alis extus brunneis, nigro minutis-*



*sine vermiculatis: remigibus alarum fusco-nigris, scapis plumarum atris: subtus dilutior, gula pallescentiore: ventre toto fulvescenti-brunneo lavato: crisso et tectricibus subcaudalibus nigro variegatis: rostri mandibula superiore plumbea, inferiore albida: pedibus clare corylinis.*

Long. tota 10·0, alæ 6·5, caudæ 2·0, tarsi 2·0, rostri a rictu 1·3.

*Hab.* In statu Oaxaca reipubl. Mexicanæ.

Two examples of this fine Tinamou are in M. Boucard's collections, both males, one from Playa Vicente (May), and the other from Teotacingo (March). The nearest allied species is the S. American *T. cinereus*.

229. *TINAMUS SALLÆI* (Bp.).—*Nothocercus sallæi*, Bp. C. R. xlii. p. 955.

*Nigricans, rufo undulatus: alarum vittis latioribus et flavescen-tioribus: cervice postica et dorso superiore fere puris; pileo nigricante; nucha rufescente, nigro undulata: lateribus capitis rufis: subtus cinnamomeo-rufus, cervice obscure cinerea, gula nivea, lateribus et crisso nigro variegatis: rostro corneo: mandibula inferiore et pedibus flavis.*

♀. *Cervice antica rufescente: pileo, sicut nucha, vittato.*

Long. tota 10·0, alæ 6·2, caudæ 1·5, tarsi 1·8.

This is the only Mexican species of Tinamou which is at all like the South American *Tinamus variegatus*, and I believe that it is the same to which Prince Bonaparte applied the name *T. delatirii* in C. R. xlviii. p. 955. I know, from the Prince's own mouth, that he was in doubt upon this point. The examples described above were obtained at Playa Vicente in May 1850. M. Sallé suggests that this bird may be Lesson's *Nothura cinnamomea* (Rev. Zool. 1842, p. 210). Though I know from experience the vileness of Lesson's descriptions, I think this hardly possible.

230. *TINAMUS MESERYTHRUS*, sp. nov.

*Ex olivaceo rufescens; alis nigricantibus, extus rufo marginatis; pileo toto nigricanti-cinereo: subtus saturate ferrugineo-rufus, medialiter clarior; crisso pallide cinnamomeo; hypochondriis et pectore antico obscurioribus, nigricante adumbratis: remigibus subtus pallide schistaceis: tectricibus caudæ elongatis, saturate castaneis: rostri mandibula superiore plumbea, inferiore albicante: pedibus clare corylinis.*

Long. tota 9·5, alæ 5·2, caudæ 1·5, tarsi 1·7, rostri a rictu 1·15.

*Hab.* In statu Oaxaca reipublicæ Mexicanæ.

This Tinamou is nearly allied to *T. sovi* of South America and *T. castaneus* of New Granada. It is easily distinguished by the deep-chestnut medial line below, contrasting with the darker sides of the body. There are but very faint traces of spots on the crissum. The male and female, procured by M. Boucard at Playa Vicente in May, are coloured alike.



P. Oudart, del. Jennens, lith.

Printed by Hullmandel & Walton

LAIMODON ALBIVENTRIS.

## Fam. CHARADRIIDÆ.

231. *ÆGIALITES VOCIFERUS* (Linn.).

Oaxaca.

## Fam. SCOLOPACIDÆ.

232. *GAMBETTA FLAVIPES* (Gm.) : Baird, Rep. p. 732.

Playa Vicente (April 1859).

## Fam. RALLIDÆ.

233. *ARAMIDES CAYENNENSIS* (Gm.).

Oaxaca.

234. *PARRA GYMNOTOMA*, Wagl.

Oaxaca. Two examples in young plumage.

## Fam. ANATIDÆ.

235. *QUERQUEDULA DISCORS* (Linn.).

State of Oaxaca.

236. *ERISMATURA RUBIDA* (Wils.).

Oaxaca.

## 5. DESCRIPTION D'UNE NOUVELLE ESPÈCE DE BARBU DE L'AFRIQUE OCCIDENTALE. PAR JULES VERREAUX, MEMBRE CORRESPONDANT DE LA SOCIÉTÉ ZOOLOGIQUE DE LONDRES.

(Aves, Pl. CLVII.)

*LAIMODON ALBIVENTRIS*, sp. nov.

Tête et cou rouges ; la base des plumes noire à partir du vertex jusque sur le haut du dos ; ce dernier ainsi que le reste des parties supérieures, le devant du cou et du thorax d'un brun terreur plus foncé au centre de ce dernier, presque toutes les plumes de ces parties ayant le rachis d'un blanc plus ou moins pur ; une tache oblongue de cette couleur au centre du croupion ; ventre, bas ventre et couvertures sous-caudales d'un blanc pur ; les plumes des flancs assez longues et délicates ; cuisses brunes, à plumes bordées de plus clair ; ailes et queue noires. Les mêmes lignes blanches du rachis sont très distinctes sur les couvertures alaires ainsi que sur les rémiges secondaires les plus rapprochées du corps.

Bec plus haut que large, à mandibule supérieure bidentée, bleuâtre à sa base qui est garnie de soies noires dirigées en avant, jaunâtre sale sur le reste ; tarses fortement scutellés, bleuâtres ainsi que les doigts ; ongles assez crochus et bruns ; aile à penne bâtarde très courte, les 4, 5 et 6<sup>mes</sup> rémiges les plus longues, et les secondaires de

la même longueur ; leurs couvertures inférieures blanches ainsi que la partie interne des rémiges ; queue arrondie.

	cent.	mill.
Long. tot. ....	16	7
— de l'aile fermée ....	8	5
— de la queue ....	7	0
— du bec à partir de l'angle.....	2	7
— tarse ....	2	0

Cette description a été prise sur un sujet mâle très adulte, provenant de l'Afrique occidentale, mais sans désignation de localité exacte.

Nous devons à l'obligeance de M. Emile Parzudaki, de la faire connaître au monde savant, ainsi que quelqu'autres nouveautés que nous ne tarderons pas à publier. Nous saisissons avec empressement l'occasion de le remercier de l'intérêt qu'il porte à cette belle science en nous offrant toutes les facilités de visiter et d'étudier les nombreux objets qui passent chaque jour dans ses magasins.

Nous saisissons avec empressement l'occasion qui se présente par l'espèce nouvelle que nous décrivons, pour indiquer toutes les espèces africaines que nous connaissons sur cette famille, en ajoutant leur synonymie telle que nous nous proposons de la reproduire dans le 'Conspectus Generum Avium' auquel nous travaillons depuis longues années, et que nous espérons livrer au public un jour.

#### Genre I. POGONIAS, Illig.

##### 1. POGONIAS DUBIUS.

*Pogonias dubius*, Bp. Consp. Av. t. i. p. 145. sp. 1 ; id. Consp. Volucr. Zygodactyl. (1854) p. 12. sp. 1 ; Hartl. Syst. Orn. Westafr. p. 169. no. 506.

*Bucco dubius*, Gm. Syst. Nat. (1796) t. i. p. 414.

*Pogonias sulcirostris*, Leach, Zool. Misc. i. p. 76 ; Sw. B. West Afr. ii. p. 166.

*Pogonias erythromelas*, Vieill. Gal. Ois. pl. 32 ; Wagl. Syst. Av. p. 164.

*Pogonias major*, Less. Trait. d'Orn. p. 159.

*Barbican*, Levaill. Barb. pl. 18.

*Pogonorhamphus*, DesMurs et Chenu, Encycl. Ois. ii. p. 14.

Afr. occ. ; Sénégal ; Casamanze ; Bissao.

##### 2. POGONIAS ROLLETI.

*Pogonias rolleti*, De Filippi, Rev. et Mag. de Zool. (1853) p. 290 ; Bp. Consp. Volucr. Zygodactyl. (1854) p. 12. sp. 1 ; Hartl. Syst. Orn. Westafr. p. 169, note.

Afr. orient. ; Nubie ; Nil blanc.

##### 3. POGONIAS BIDENTATUS.

*Pogonias bidentatus*, Bp. Consp. Av. t. i. p. 145. sp. 2 ; Hartl. Syst. Orn. Westafr. p. 170. no. 507.

*Bucco dubius*, var.  $\beta$ , Lath.

- Pogonias lævirostris*, Leach, Zool. Misc. t. 77.  
*Bucco leuconotus*, Vieill. Encycl. Méth. ; Wagl. Syst. Av. p. 164.  
 sp. 2 ; Shaw, Nat. Misc. t. 393.  
*Pogonias levaillantii*, Leach, l. c. t. 117.  
*Bucco levaillantii*, Vieill. Encycl. Méth. p. 1422.  
*Laimodon bidentatus*, Gray.  
*Barbican unibec*, Levaill. Barb. Supp. p. 48. t. K. ad.  
*Barbican à ventre rose*, Levaill. Barb. t. A. juv.  
*Laimodon lævirostris*, Heugl. Uebers. p. 47. no. 480.  
 Afr. occ. ; Sénégal ; Guinée ; Gabon.

## Genre 2. LAIMODON, Gray.

### 4. LAIMODON ALBIVENTRIS.

*Laimodon albiventris*, J. Verr. *supra*.  
 Afr. occ.

### 5. LAIMODON LEUCOCEPHALUS.

*Laimodon leucocephalus*, De Filippi, Rev. et Mag. Zool. (1855)  
 p. 291.  
 Afr. orient. ; Nubie ; Nil blanc.

### 6. LAIMODON NIGRITHORAX.

*Laimodon nigrithorax*, Gray ; Bp. Consp. Volucr. Zygodactyl.  
 (1854) p. 12. sp. 3.  
*Pogonias nigrithorax*, Cuv. Règ. An. (1817) t. i. App. p. 428.  
*Bucco personatus*, Temm. Pl. Col. 201 ; Wagl. Syst. Av. sp. 3 ;  
 Levaill. Barb. pl. 28.  
*Pogonias nigrithorax*, Bp. Consp. Av. t. i. p. 145. sp. 3.  
*Pogonias personatus*, Less. Trait. d'Orn. p. 160. sp. 1.  
 Afr. mér. ; Caffrérie.

### 7. LAIMODON UNIDENTATUS.

*Laimodon unidentatus*, Gray ; Bp. Consp. Volucr. Zygodactyl.  
 (1854) p. 12. sp. 8.  
*Pogonias unidentatus*, Licht. Verz. Sudafric. Th. p. 17. sp. 179.  
*Bucco niger*, Gm. Syst. Nat. (1796) t. i. p. 411.  
*Bucco rufifrons*, Steph.  
*Trogon luzoniensis*, Scopoli.  
*Pogonias stephensi*, Leach, Zool. Misc. t. 116 ; Vieill. Gal. Ois.  
 pl. 33.  
*Pogonias niger*, Less. Trait. d'Orn. p. 160. sp. 2.  
*Laimodon leucomelas*, Gray ; Buff. Pl. Enl. 688. 1 ; Sonner. Voy.  
 t. 34 ; Levaill. Barb. t. 29, 30, 31.  
*Pogonias unidentatus*, Bp. Consp. Av. t. i. p. 146. sp. 9.  
*Pogonias niger*, Bp. l. c. p. 145. sp. 6.  
*Megalæma leucotis*, Sundev. Öfvers. (1850) p. 109.  
 Afr. mér. et occid. ; Caffrérie.



## 8. LAIMODON BIFRENATUS.

*Laimodon bifrenatus*, Gray ; Bp. Consp. Volucr. Zygod. (1854) p. 12. sp. 7.

*Pogonias bifrenatus*, Ehrenb. Symb. Phys. t. 8. f. 2 ; Bp. Consp. Av. t. i. p. 145. sp. 8 ; Hartl. Caban. Journ. Orn. (1854) p. 197. sp. 418 ; id. Syst. Orn. Westafr. p. 171. no. 510.

*Pogonias melanocephalus*, Rüpp. Atl. t. 28 A. p. 41.

Afr. orient.

## 9. LAIMODON SALTII.

*Laimodon salti*, Gray ; Bp. Consp. Volucr. Zygod. (1854) p. 12. sp. 4.

*Bucco salti*, Stanley, Salt's Trav. Abyss. App. ; Lath. Gen. Hist. iii. p. 258. t. 53.

*Phytotoma tridactyla*, Daud.

*Ploceus abyssinicus*, Steph.

*Pogonias hæmatops*, Wagl. Syst. sp. 4.

*Pogonias rubrifrons*, Sw. B. of West Afr. ii. p. 170 ; id. Zool. Ill. pl. 68.

*Pogonias brucii*, Rüpp. Wirb., Av. t. 20. 1.

*Pogonias salti*, Bp. Consp. Av. t. i. p. 145. sp. 4.

*Laimodon undatus*, Rüpp. Faun. Abyss. t. 20. f. 2.

*Pogonias undatus*, Temm. Mus. Lugd. ; Bp. Consp. Av. t. i. p. 146. sp. 10.

*Pogonias salti*, Hartl. Syst. Orn. Westafr. p. 170. no. 508.

Afr. orient. et occid. ; Abyssinie ; Nubie ; Sierra Leone ?

## 10. LAIMODON VIEILLLOTI.

*Laimodon vieillotii*, Gray ; Bp. Consp. Volucr. Zygod. (1854) p. 12. sp. 5.

*Pogonias vieillotii*, Leach, Zool. Misc. t. 97 ; Less. Trait. d'Orn. p. 160. sp. 3 ; Bp. Consp. Av. t. i. p. 145. sp. 5.

*Barbu rubicans*, Levaill. Barb. Suppl. f. D.

*Pogonias fuscescens*, Vieill. Encycl. Méth. p. 1421.

*Pogonias rubescens*, Temm.

*Pogonias senegalensis*, Licht. Doubl. p. 9.

*Pogonias rufifrons*, Sw. B. of West. Afr. ii. p. 168.

*Pogonias hæmatops*, Wagl. Syst. Av. sp. 5.

*Pogonias vieillotii*, Hartl. Syst. Orn. Westafr. p. 170. no. 509.

Afr. occ. et orient. ; Sénégal ; Bissao ; Casamanze ; Guinée ; Nubie.

## Genre 3. TRICHOLEMMA, Verr.

## 11. TRICHOLEMMA HIRSUTA.

*Tricholæma hirsuta*, Hartl. Syst. Orn. Westafr. p. 172. no. 512.

*Pogonias hirsutus*, Sw. Zool. Ill. pl. 72 ; id. B. of West Afr. ii. p. 172 ; id. Wagl. Syst. Av. sp. 7 ; id. Steph. Gen. Zool. xiv. p. 149 ; Bp. Consp. Av. t. i. p. 145. sp. 7 ; Hartl. Caban. Journ. Orn. (1854) no. 417.

*Laimodon hirsutus*, Gray; Bp. Consp. Volucr. Zygod. (1854) p. 12. sp. 9.

*Tricholæma flavipunctata*, J. Verr. Caban. Journ. Orn. ii. p. 103; id. Rev. et Mag. Zool. (1855) p. 555. pl. 14, juv.; Bp. Consp. Vol. Zygod. (1854) p. 12. sp. 20.

Afr. occid.; Sierra Leone; Dabocrom; Gabon; Calabar.

#### Genre 4. GYMNOBUCCO, Bp.

##### 12. GYMNOBUCCO CALVUS.

*Gymnobucco calvus*, Hartl. Caban. Journ. Orn. (1854) p. 195. no. 405; id. Syst. Orn. Westafr. p. 174. no. 519.

*Bucco calvus*, Lafr. Rev. Zool. (1841) p. 241; Bp. Consp. Vol. Zygod. (1854) p. 12. sp. 10.

Afr. occid.

##### 13. GYMNOBUCCO PELI.

*Gymnobucco peli*, Hartl. Syst. Orn. Westafr. p. 175. no. 520.

*Bucco calvus*, Temm. Mus. Lugd.

*Gymnobucco calvus*, Bp. Consp. Av. t. i. p. 141.

Afr. occid.; Dabocrom; Gabon.

##### 14. GYMNOBUCCO BONAPARTII.

*Gymnobucco bonapartei*, J. Verr. Caban. Journ. Orn. (1855) p. 102. no. 3; Hartl. ib. p. 410; id. Bp. Consp. Volucr. Zygod. (1854) p. 12. sp. 11; Hartl. Syst. Orn. Westafr. p. 175. no. 521.

*Barbatula fuliginosa*, Cassin, Proc. Ac. Nat. Sc. Philad. (1855) p. 324; Bp. Compt. Rend. Acad. des Sci. (1856) p. 17.

Afr. occid.; Gabon; Moonda.

#### Genre 5. XYLOBUCCO, Bp.

##### 15. XYLOBUCCO SCOLOPACEUS.

*Xylobucco scolopaceus*, Bp. Consp. Av. t. i. p. 141; id. Consp. Vol. Zygod. (1854) p. 12. sp. 12; Hartl. Caban. Journ. Orn. (1854) p. 195. no. 406; id. Syst. Orn. Westafr. p. 174. no. 518.

*Bucco scolopaceus*, Temm. Mus. Lugd.

*Barbatula stellata*, Fras. Proc. Zool. Soc. (1843) p. 4; Jard. Contr. Orn. (1851) p. 155.

*Barbatula flavisquamata*, J. Verr. Caban. Journ. Orn. (1855) p. 101; Bp. l. c. p. 12. sp. 13.

Afr. occid.; Dabocrom; Fernando Po; Gabon; Moonda; Calabar.

#### Genre 6. BUCCANODON, J. Verr.

##### 16. BUCCANODON DUCHAILLUI.

*Buccanodon duchailui*, Hartl. Syst. Orn. Westafr. p. 171. no. 511.

*Barbatula duchailui*, Cassin, Proc. Acad. Nat. Sc. Philad. (1855) p. 324.

*Barbatula formosa*, Verr. Rev. et Mag. Zool. (1855) p. 213. sp. 2. pl. 5.

Afr. occid. ; Moonda ; Gabon.

#### Genre 7. BARBATULA, Less.

##### 17. BARBATULA ATROFLAVA.

*Barbatula atroflava*, Bp. Consp. Av. t. i. p. 145. sp. 3 ; id. Consp. Volucr. Zygodactyl. (1854) p. 12. sp. 17 ; Hartl. Journ. Orn. (1854) p. 196. no. 409 ; id. Syst. Orn. Westafr. p. 172. no. 514.

*Bucco atroflavus*, Blumenb. Abb. Naturh. Gegenst. t. 65 ; Sparrm. Act. Suec. xviii. t. 9.

*Bucco erythronotus*, Cuv. Règ. An. (1817) t. i. App. p. 428 ; Less. Trait. d'Orn. p. 164. sp. 18.

*Barbatula erythronotus*, Verr. Rev. et Mag. Zool. (1851) p. 262 ; Strickl. Jard. Contr. Orn. (1851) p. 135. sp. 25 ; Levaill. Barb. pl. 57.

Afr. occid. ; Liberia ; Aguapim ; Galam ; Gabon ; Moonda.

##### 18. BARBATULA SUBSULFUREA.

*Barbatula subsulfurea*, Hartl. Cab. Journ. Orn. (1854) p. 195. no. 408 ; id. Syst. Orn. Westafr. p. 172. no. 513.

*Bucco subsulfureus*, Fras. Proc. Zool. Soc. (1843) p. 3 ; Allen Thoms. Nig. Exped. ii. p. 404 ; Fras. Zool. Typ. pl. 52.

*Capito subsulfureus*, Gray.

*Trachyphonus subsulfureus*, Bp. Consp. Av. t. i. p. 142. sp. 2 ; id. Consp. Volucr. Zygod. (1854) p. 12. sp. 23 ; Des Murs et Chenu, Encycl. ii. p. 19.

*Barbatula flavimentum*, Verr. Rev. et Mag. Zool. (1851) p. 262 ; Strickl. Jard. Contr. Orn. (1851) p. 135.

Afr. occid. ; Fernando Po ; Gabon ; Moonda ; Aguapim.

##### 19. BARBATULA LEUCOLAIMA.

*Barbatula leucolaima*, Verr. Rev. et Mag. Zool. (1851) p. 263 ; Strickl. Jard. Contr. Orn. (1851) p. 135. sp. 27 ; Bp. Consp. Vol. Zygod. (1854) p. 12. sp. 16 ; Hartl. Syst. Orn. Westafr. p. 173. no. 515.

*Megalæma bilineata*, Sundev. Öfvers. K. Vet. Ac. Förh. (1850) p. 109.

Afr. occid. ; Sénégal ; Gabon ; Aguapim ; Casamanze.

##### 20. BARBATULA CHRYSOCOMA.

*Barbatula chrysocoma*, Bp. Consp. Av. t. i. p. 145. sp. 4 ; id. Consp. Volucr. Zygod. (1854) p. 12. sp. 14 ; Hartl. Journ. Orn. (1854) p. 196. no. 411 ; id. Syst. Orn. Westafr. p. 173. no. 516 ; Heugl. Uebers. p. 47. no. 481.

*Bucco chrysocomus*, Temm. Pl. Col. 536. f. 2 ; Heugl. Uebers. p. 47 ; Herz. v. Würtenb. Icon. ined. t. 55 C.

*Bucco parvus*, Less. Trait. Orn. p. 165 ; Compl. à Buff. ix. p. 292. Afr. occid. et orient. ; Sénégal ; Gambia ; Casamanze ; Sennaar ; Fazoglo.

## 21. BARBATULA PUSILLA.

*Barbatula pusilla*, Bp. Consp. Av. t. i. p. 144. sp. 1 ; id. Consp. Volucr. Zygod. (1854) p. 12. sp. 19.

*Bucco pusillus*, Dum.

*Bucco barbatula*, Temm. Pl. Col. sp. 18, 19.

*Bucco chrysopterus*, Sw.

*Bucco chrysozonicus*, Rüpp.

*Bucco nanus*, Vig.

*Capito rubrifrons*, Vieill. Encycl. Méth. p. 1423.

*Barbatula nana*, Gray.

*Megalaima barbatula*, Gray.

*Bucco parvus*, Cuv. ; Less. Trait. Orn. p. 164. sp. 19 ; Buff. Pl. Enl. 742. f. 2 ; Levaill. Barb. pl. 32.

*Barbatula minuta*, Bp. Consp. Av. t. i. p. 144. sp. 2 ; Hartl. Syst. Orn. Westafr. p. 173. no. 517 ; Bp. Consp. Vol. Zygod. (1854) p. 12. sp. 18.

Afr. mér., orient. et occid. ? ; Caffrérie ; Nubie ; Sénégal ?

## Genre 8. TRACHYPHONUS, Ranzani.

### 22. TRACHYPHONUS CAFER.

*Trachyphonus cafer*, Bp. Consp. Av. t. i. p. 142. sp. 1 ; id. Consp. Volucr. Zygod. (1854) p. 12. sp. 21.

*Picus cafer*, Gm. Syst. Nat. (1796) t. i. p. 368. sp. 25.

*Trachyphonus vaillanti*, Ranz.

*Trachyphonus cafer*, Gray.

*Polysticte quopopa*, A. Smith, Rep. Exp. S. Afr. Expl. (1856).

*Micropogon sulphuratus*, Lafr. Mag. Zool. (1836) pl. 60.

*Trachyphonus squamiceps*, Heugl. Beitr. t. 28. 2 ; id. Uebers. p. 47. no. 482.

Afr. mérid. ; Kurrichaine.

### 23. TRACHYPHONUS MARGARITATUS.

*Trachyphonus margaritatus*, Bp. Consp. Av. t. i. p. 142. sp. 3 ; id. Consp. Volucr. Zygod. (1854) p. 12. sp. 22.

*Bucco margaritatus*, Rüpp. Atl. pl. 20 ; Heugl. Uebers. p. 47. no. 483.

*Micropogon margaritatus*, Temm. Pl. Col. 490.

*Tamatia erythropygius*, Ehrenb. Icones Av. t. 7.

*Capito margaritatus*, Gray.

Afr. orient. ; Abyssinie ; Nubie.

### 24. TRACHYPHONUS PURPURATUS.

*Trachyphonus purpuratus*, Verr. Rev. et Mag. Zool. (1851) p. 260 ;

Strickl. Jard. Contr. Orn. (1851) p. 135. sp. 24 ; Hartl. Cab. Journ. Orn. (1854) p. 195. no. 407 ; id. Syst. Orn. p. 175. no. 522 ; Chenu et Des Murs. Encycl. Orn. ii. p. 22 ; Bp. Consp. Volucr. Zygod. (1854) p. 12. sp. 24.

Afr. occid. ; Gabon ; Moonda.

P.S. Nous ne connaissons pas le *Laimodon diadematus*, Heugl. Beitr. t. 28. 1, et Uebers. p. 47. no. 479, de l'Afr. orient.

Paris, le 1<sup>er</sup> Octobre, 1859.

## 6. NOTICE OF A RARE ASIATIC PIGEON. BY FREDERIC MOORE.

The bird which I beg leave to bring before the Meeting belongs to that group of Pigeons typified by the common Rockdove (*Columba livia*, L.), being an intermediate *species* between it and the *C. leuconota*, Vigors, and has hitherto been known only as an inhabitant of the mountainous and rocky parts of Dauria and Songaria, in Central Asia. The specimen under examination was procured in Ladakh by Captain Richard Strachey, and is the

### COLUMBA RUPESTRIS.

*Columba cænas*, var. *rupestris*, Pallas, Zoogr. Rosso-Asiat. p. 560, pl. 35.

*Hab.* Mountainous regions of Central Asia.

*Description of Specimen from Ladakh.*—Head, throat, and ear-coverts darkish ash-colour ; the feathers round the neck glossed with changeable dark green and reddish-purple ; middle of breast vinous-brown ; upper part of the back, fore part of the wing, the base of the secondaries, the tertiaries, and the lower part of the breast pale ashy-grey ; primaries and speculars ashy-brown ; tertiaries and the greater coverts with a subterminal black band ; lower part of the back, rump, fore part of wings beneath, and sides of body white ; abdomen and under tail-coverts ashy-white ; upper tail-coverts and base of tail for three inches, ash-colour, the tail with a black terminal band and a broad subterminal white band : the latter band does not lessen in width, or curve to the *tip* of the outermost feather, as in *C. leuconota*, but is almost even, curving slightly only *towards the base* of the outer feather ; the base of the outer web of the outermost tail-feather is also white. Bill and legs smaller than in *C. leuconota*, *livia*, or *intermedia*.

Length of unmounted specimen  $11\frac{1}{2}$  inches ; of wing 9 inches ; tail  $5\frac{1}{4}$  inches, with its outer feather  $\frac{1}{2}$  inch less ; tarsus 1 inch ; mid toe and claw  $1\frac{1}{4}$  inch ; hind toe and claw  $\frac{6}{10}$ ths of an inch ; bill to frontal plumes  $\frac{9}{16}$ ths, to gape  $\frac{8}{10}$ ths of an inch.

This species was also recently observed in Ladakh by Dr. A. Leith Adams, as appears from the following note in his "List of the Birds of Cashmere and Ladakh," published in the 'Proceedings' of the Society for the present year (*vide antea* p. 187), wherein it is stated that "*flocks of a pied variety of C. livia* (if indeed



it is a variety and not a distinct species, and which might easily be confounded with *C. leuconota*) were seen on the rocky banks of the Dras river, Ladakh, having the back and wings of a light blue; *rump white*; tail-coverts leaden-black; *a broad white band across the middle of the tail*, its tip black; inner surface of wings white; *belly and lower parts bluish-white*. They were mixed up with flocks of *C. livia*; and my reasons for supposing it only a variety were the constant companionship of the two, and some variety as regards the colouring of both; however, it is possible they may be distinct species. *I saw this bird nowhere else* \*."

The late Major Boys, of the Bengal Cavalry, a most experienced collector of Indian birds, also distinguished a 'Blue Rock Pigeon,' which he procured at Hāwulbāgh in Kemāon, and which is evidently this species. "This pigeon," he remarks †, "differs considerably from the common Blue Pigeon, particularly in its weight and size. Length of a male  $12\frac{3}{4}$  inches by 25 inches; weight 7 ozs. 8 drs. Bill black, the cere grey; iris red; legs pink. Top of head, chin, and sides of face ashy-grey; back of neck and upper part of breast glazed metallic green; bottom of neck metallic purple, blending into ashy light grey on the belly; flanks and vent light grey; wing-coverts and upper part of the back of the same colour; *middle of back white*; upper tail-coverts dark ashy-grey. Quills grey (the shafts black), darker near their tips; second quill longest; outer webs darker than the inner. Some of the larger wing-coverts (those covering the tectrices), together with the last six or seven tertiaries, bear a patch of greyish-black, which, when the wing is extended, forms two indistinct and somewhat curved bands. Tail dark grey at the base, broadly tipped with black, and having between these two colours a *broad stripe of white*. Inferior coverts white, blending with grey towards the anterior margin of the wing. Length of tail 5 inches, the quills (when the wings are closed) reaching to its tip. The exterior tail-feathers are pure white from their bases on the external web, finished off at the tip with black, the inner webs being grey at base, as obtaining in the intermediate feathers."

From the above notes it appears that the range of the *C. rupestris* extends southward as far as Kemāon, on the southern side of the Himalayas.

\* Dr. Leith Adams since writes me that he killed several specimens of this bird, which was common on rocky places around the Ladakh Lakes. In his Notebook is the following memorandum:—"Salt Lakes, Ladakh, July 24th, 1852. There is a pigeon in the rocky parts around the Lakes, called by sportsmen the 'Imperial Rock Pigeon.' I fancy they think it is the *C. leuconota*; but from three specimens I have shot to-day, I can make out a decided distinction."

† Vide J. A. S. Beng. 1857, p. 224.

7. SECOND LIST OF COLD-BLOODED VERTEBRATA COLLECTED BY  
MR. FRASER IN THE ANDES OF WESTERN ECUADOR. BY  
DR. A. GÜNTHER, FOREIGN MEMBER ZOOL. SOC.

(Reptilia, Pl. XX.)

The second collection of Reptiles and Fishes sent by Mr. Fraser is richer than the first, in specimens as well as in species. Many have retained their natural colours. There are thirteen species of *Saurians*, six of which are new to science. Three species formerly sent are not in this collection, viz. *Anolis æneus*, *Microphractus humeralis*, and *Amphisbæna fuliginosa*. The species formerly mentioned as *Anolis cristatellus*? (p. 89) has proved to be a new one, of which better specimens are contained in the present collection.

The *Snakes* belong to twenty-one species, several of which have been known for a short period only, and two of which are new. Some are particularly interesting on account of their variation from specimens of the same species collected in other parts of South America. Three species formerly sent are not in this collection, viz. *Erythrolamprus venustissimus*, *Xenodon severus*, and *Spilotes pæcilostoma*.

There are nine species of *Batrachians*, two of which are new. *Nototrema marsupiatum* has been procured of a size not seen before; four of the species formerly sent are not in this collection; and it is very strange that Mr. Fraser does not appear to have met with a single *Hyla* in the country he has just examined.

Three species of *Cæcilia* were found, one being new. They are the first specimens met with by Mr. Fraser.

Eleven species of *Fishes*, characteristic of the fresh waters of South America, and different from those sent before, conclude the series of this splendid collection: six of them are new to science.

Typical specimens of the new and interesting species will be retained for the Collection of the British Museum.

## SAURIA.

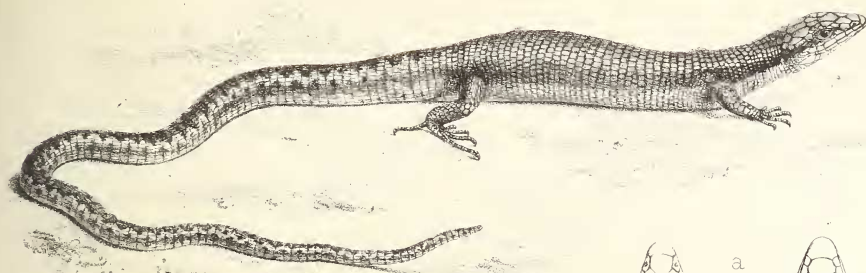
### 1. CROCODILUS AMERICANUS, Schneid.

### 2. AMEIVA SEX-SCUTATA, n. sp.

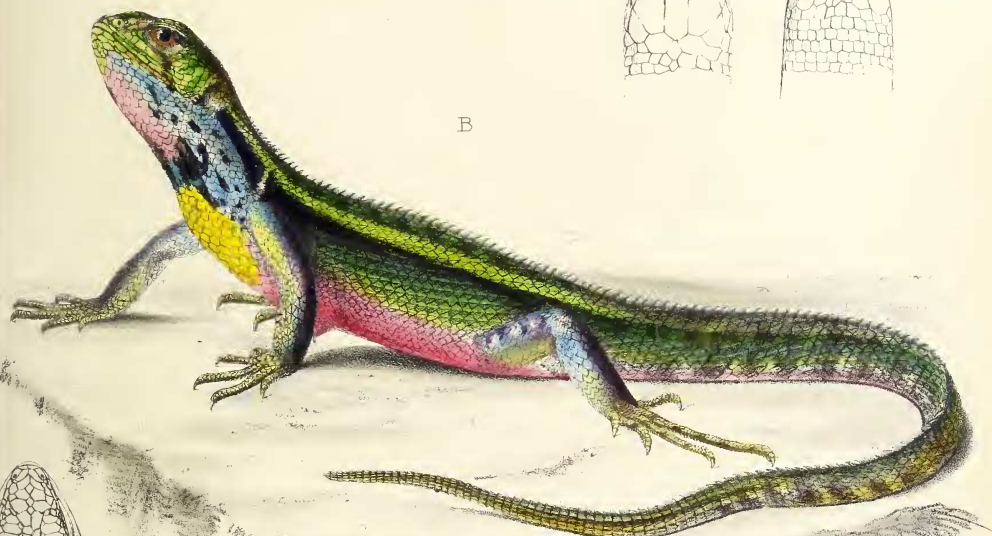
*Diagnosis*.—Abdominal shields in six longitudinal series. The upper surface of the head covered by a pair of anterior nasals, a single anterior frontal, a pair of posterior frontals with a small single shield between, three pairs of parietals, and many small occipitals. Greenish-olive, speckled with brownish: a whitish dorsal streak from the muzzle to the middle of the tail; on each side of the back from the eye to the loin a black band, edged with whitish.

*Description*.—The muzzle is rather elongate, pyramidal; the nostril is situated laterally immediately behind the rostral, between four shields, viz. rostral, anterior and posterior nasal, and the first upper labial. The successive series of the shields covering the upper surface of the head is as follows:—1. The rostral shield is obtusely

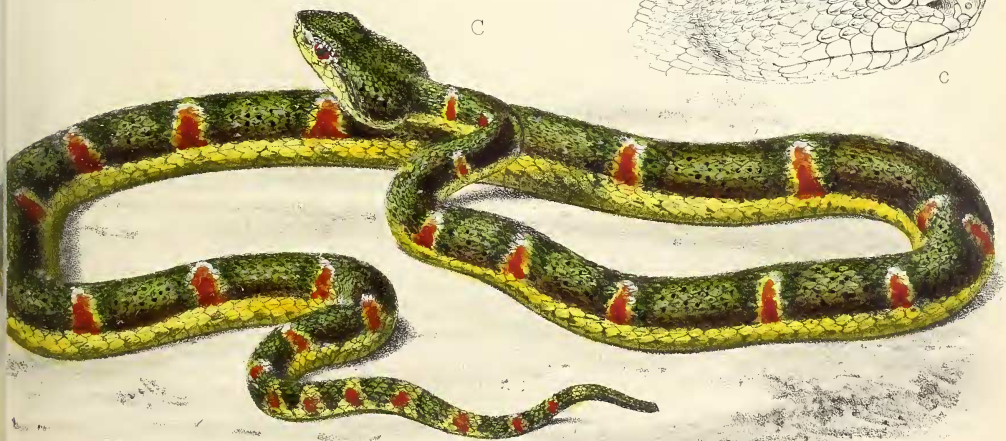
A



B



C



Ford

Westrup

*Cercosaurus rhombifer*, Gthr B *Lioccephalus iridescens*, Gthr C *Lachesis nitidus*, Gthr



rounded, as high as wide, with the posterior extremity rectangular and slightly produced backwards on the upper side of the head. 2. A pair of anterior nasals, irregularly quadrangular, united by a suture, and forming the upper margin of the nostril. 3. A single anterior frontal, pentagonal, with the lateral angle in contact with the posterior nasal; its posterior side is very short. 4. A pair of posterior frontals with a single shield between; the former are irregularly elliptical, and form a suture with the loreal; the latter is narrow, oblong. 5. Three pairs of parietals, one behind the other, and occupying the space between the orbits. 6. The occipital region is covered by many small irregular shields. 7. The upper eyelid has two semi-elliptical shields, surrounded by granulations.

Of the lateral shields of the head the posterior nasal is mentioned above; it is in contact posteriorly with the very large loreal, which reaches to the orbit, occupying nearly the whole loreal region; four smaller shields form the lower margin of the orbit. There are five rather narrow upper labial shields with several small ones behind.

The lower jaw has a slightly convex anterior labial, and four lateral ones, the third of which is as long as the others together. There is a single pentagonal chin-shield between the first two labials, forming a straight transverse suture with the front labial. Two series of shields arise from its two posterior sides, parallel to, and broader than, the series of the lower labials; each is formed by five shields. The throat, before the folds, is covered with granular scales. There are the two folds, characteristic of the genus, with the series of shields between.

The back and the sides of the body are covered with minute granular scales, arranged in regular cross series. The ventral shields form six longitudinal and twenty-four transverse rows. A triangular space before the vent also is shielded. The scales of the tail are oblong, strongly keeled, arranged in regular rings.

The fore-leg reaches to the extremity of the snout, if laid forwards. The third and fourth fingers are equal in length, then follow the second, the fifth, and the first; its anterior side and the fingers are covered with one-rowed imbricate shields, those of the fore-arm being the largest. The posterior extremity reaches to the posterior margin of the orbit, if laid forwards. The relative length of the toes does not differ from other species of the genus. The interior side of the limb and the upper parts of the foot are shielded, the remainder being granular. The shields of the upper leg form three rows, those of the lower are larger and form two only; all are imbricate. The series of femoral pores is composed of twenty foramina.

The ground colour of the upper parts is greenish-olive, irregularly and indistinctly speckled with darker. A greenish-white stripe runs from the muzzle along the vertebral line towards the middle of the tail, where it is gradually lost. A little before the eye, and distinctly from the eye begins a black lateral band, edged with greenish-white to the hip, and is lost soon after it has reached the side of the tail. The lower parts are uniformly greenish-white.

A single specimen is in the collection.

inches. lines.

Distance between the extremity of the snout and the tympanum.....	0	10
Distance between the tympanum and the vent ..	2	7
Length of the tail .....	7	6
Distance between the extremity of the snout and the anterior margin of the orbit .....	0	5
Distance between the anterior angles of the orbits	0	3½
Length of the anterior extremity .....	1	3
———— of the third finger .....	0	5
———— of the posterior extremity .....	2	7
———— of the foot .....	1	4
———— of the fourth toe.....	0	11

### 3. CUSTA BICARINATA, L.

The exact habitat of this species was not known before.

### 4. MONOLOCUS, n. g. (*Teidæ*.)

Tongue elongate, free, not sheathed, terminating in two very fine points. Palatine teeth none; the posterior teeth in the jaws bi- or tricuspid. Tympanum distinct. Throat with a single fold. Scales of the back exceedingly small, those of the sides granular; gular and ventral shields keeled. Tail rounded, covered with keeled and verticillated scales of moderate size. Femoral pores none.

#### MONOLOCUS DORSALIS, n. sp.

*Diagnosis*.—A greenish-white longitudinal streak from the extremity of the snout to the middle of the back, where it is gradually lost.

*Description*.—The general habit is slender. The snout is of moderate length, pyramidal; the nostril is laterally situated between the two nasals. The successive series of shields covering the upper surface of the head is as follows:—1. The rostral shield is obtusely conical, as high as wide, with the posterior angle acute and produced backwards on the upper surface of the head. 2. A pair of anterior nasals, quadrangular, touching each other behind the rostral, and enclosing the greater part of the nostril. 3. A single anterior frontal, hexagonal, with the anterior and posterior angles obtuse, and with the outer sides shortest and in contact with the posterior nasal and the loreal. 4. A pair of posterior frontals, irregularly pentangular. 5. A single anterior parietal, the largest of the shields of the head, pentagonal, with the anterior side rather curved, and with the two hinder ones shortest. 6. A pair of posterior parietals, irregularly quadrangular. 7. Five occipital shields, one forming the centre, the others being symmetrically arranged. 8. The upper eyelid is covered by two larger and two or three smaller shields.

The lateral shields of the head are the posterior nasal, the loreal, which is larger than the former, and three oculars, forming the anterior and lower margin of the orbit. There are six very narrow upper labial shields and several smaller ones behind.



The single anterior labial of the lower jaw is slightly convex, as long as wide; there are five narrow shields along the side of the lip, the third being the longest. There is a single pentagonal chin-shield between the first two labials, forming a straight transverse suture with the front labial. Two series of shields arise from its two posterior sides, parallel to, and broader than, the series of the lower labials; each is formed by four shields. The throat, before the collar, is covered with granular scales; the collar itself is formed by a fold, before which are some keeled scales of moderate size.

The tympanum is round, of moderate extent, and not surrounded by any particular scales.

The scales of the back are exceedingly small, smooth, imbricate, those of the sides finely granular; the ventral shields are quadrangular, keeled, and form eleven longitudinal and thirty-one transverse series. The space before the vent also is shielded. The scales of the tail, which is rounded, are of moderate size, oblong, keeled, verticillated, each *verticillus* being formed by a single ring of scales.

The fore-leg reaches to the extremity of the snout, if laid forwards. The third and fourth fingers are equal in length, then follow the fifth, the second, and the first; its anterior side and the fingers are covered with imbricate scales, those of the upper and fore-arm being keeled. The hind-leg reaches to the anterior margin of the orbit, if laid forwards. The toes have the usual relative length of this family. The interior side of the limb and the upper parts of the foot are similarly scaled as the fore-leg. There are no femoral pores.

The ground colour is greenish-blue; a greenish-white streak runs from the tip of the snout to the middle of the back, where it is gradually lost. A black serrated band on each side of the vertebral streak extends from the nostril to the loin, emitting cross-streaks to its fellow; the anterior part of the tail also exhibits several irregular black cross-streaks.

A single specimen is in the collection.

	inches. lines.	
Distance between the extremity of the snout and the tympanum.....	0	7
Distance between the tympanum and the vent ..	1	7
Length of the tail .....	4	0
Distance between the extremity of the snout and the anterior margin of the orbit .....	0	3
Distance between the anterior angles of the orbits	0	2 $\frac{1}{4}$
Length of the anterior extremity .....	0	10
—— of the third finger .....	0	3 $\frac{1}{2}$
—— of the posterior extremity .....	1	7
—— of the foot .....	0	10
—— of the fourth toe .....	0	7 $\frac{1}{2}$

5. *CERCOSAURUS GAUDICHAUDI* (*Ecpleopus gaudichaudi*, Dum. and Bibr.), Gray, Catal. p. 60.

6. *CERCOSAURUS RHOMBIFER*, n. sp. (Pl. XX. fig. A.)

*Diagnosis*.—Scales smooth, in fifty cross series between the occi-

put and the origin of the tail. Brownish-grey, with a vertebral band, composed of rhombic brown spots, beginning on the middle of the trunk and distinct from the origin of the tail; a black band on each side of the neck.

*Description.*—The head is slightly depressed, with the muzzle rather produced; the body is cylindrical, and continued in a very long and strong rounded tail; the extremities are rather short. The successive series of shields covering the upper surface of the head is as follows:—1. The rostral shield is broader than high, semi-circular, without posterior angle. 2. A single anterior frontal, pentagonal, forming a straight transverse suture with the rostral; its posterior angle is a right one. 3. A pair of posterior frontals, forming a short suture together, each being hexagonal, with three short and three longer sides. 4. A single anterior parietal, hexagonal, broadest anteriorly, with an obtuse angle in front and with the posterior sides shortest. 5. A pair of rather small posterior parietals. 6. Two series of occipital shields, the anterior being formed by three, the posterior by five; those of the anterior series are the largest, and the middle one is hexagonal, elongate. 7. The roof of the orbit is covered by three larger and several smaller shields.

The lateral shields of the head are, a single nasal, pierced in the centre by the nostril, a loreal of moderate size, and two anteorbitals. There are seven upper labials, longer than high. The front labial of the lower jaw is very much like the rostral; there are six rather narrow lower labials. A single pentagonal anterior chin-shield forms a straight transverse suture with the front labial; then follow three pairs of shields, the posterior ones the largest, forming sutures together, and not leaving a free space between them for smaller scales. The temples are scaly. The tympanum is placed immediately behind the cleft of the mouth; it is small, rounded, and rather deeply situated.

All the body and the tail are covered with square smooth scales, arranged in rings, completely surrounding the body; the scales of one ring always alternate with those of the following. There are fifty rings between the occiput and the origin of the tail, thirty on the belly. The scales on the sides are rather smaller. The space before the vent is covered with larger shields, the extremities with hexagonal scales. A trace of a collar fold is just visible.

The extremities are rather short: the fore-leg reaches to the middle of the eye, if laid forwards. The third and fourth fingers are equal in length, then follow the second, the fifth, and the first. The hind-leg reaches a little before the middle of the trunk, if laid forwards; the fourth toe is the longest, the third and fifth are nearly equal in length, then follow the second and the first.

There are no palatine teeth; the posterior maxillary teeth are indistinctly tricuspid.

The ground colour of the upper parts is brownish-grey from the middle of the trunk; the dorsal line appears spotted with darker, the spots assuming the regular form of rhombs at the origin of the tail, and forming a continuous band to its tip; there is a similar

though paler band on each side of the tail. A dark stripe passes the eye and is continued as a black band to the axil. The lower parts are whitish, the tail dotted with greyish.

A single adult female is in the collection.

	inches. lines.	
Distance between the extremity of the snout and the tympanum.....	0	5½
Distance between the tympanum and the vent ..	1	8
Length of the tail .....	5	0
Distance between the extremity of the snout and the anterior margin of the orbit .....	0	2½
Distance between the anterior angles of the orbits	0	2
Length of the anterior extremity .....	0	6
——— of the third finger .....	0	1½
——— of the posterior extremity .....	0	8
——— of the fourth toe.....	0	2½

#### 7. PROCTOPORUS PACHYURUS, Tschudi.

#### 8. ENYALIUS LATICEPS, Guichen.

A large adult specimen, probably a male; differs from the other smaller ones by having a series of larger scales along the side of the back, by having a distinct black collar, and a yellowish longitudinal band from the tympanum to the shoulder.

#### 9. ANOLIS FRASERI, n. sp.

*Diagnosis.*—Snout moderately elongate and depressed, with a distinct canthus rostralis, and with a pair of obtuse ridges arising from the bony superciliary margins; a slight groove between those two ridges; the upper surface of the snout and the space between the orbits are covered with innumerable very small shields. Loreal region nearly flat, with five series of small shields. Occipital shield none, or scarcely distinguishable from the others. All the scales exceedingly small, those of the abdomen rather larger and keeled. Neck without any crest; trunk with a very slight serrated ridge, perceptible in large individuals only; tail not crested. Pouch of the throat well developed. Tail not compressed, not verticillated, with the scales keeled and small. Greyish- or brownish-olive; back and tail with indistinct broad brown cross-bands.

*Description.*—The snout is moderately depressed and slightly elongate, the distance between the anterior angles of the orbits being three-quarters of the distance between the orbit and the extremity of the snout; anteriorly it is rounded. The canthus rostralis is distinct, but not very sharp, and there is another pair of low convergent ridges, arising from the superciliary margin of the bony orbit and extending a little beyond the middle of the snout; there is a shallow groove between those ridges, but the space between the ridges and the canthus rostralis is rather flat.

The species is distinguished (especially from *A. sagræ* and *nebulosus*) by the exceedingly small shields of the upper parts of its head;

it is quite impossible to state their number; there is no occipital shield, or it is very small; in the middle of the upper eyelid is a group of somewhat larger shields, like those along the superciliary margin and the canthus rostralis, but they also are very small, compared with other species. The nostril opens laterally, and is situated immediately behind the extremity of the snout. The labial shields are exceedingly narrow; there are three or four series of smaller shields running parallel to that of the lower labials, the remainder of the throat being covered with granular scales.

The tympanum is a small cleft, without any particular scales round its margin; the scales on the temple and on the neck are exceedingly small, granular. The pouch of the throat is well developed.

There is a very low serrated ridge along the back of the largest of the specimens; the other dorsal scales are minute, those on the sides yet smaller, and those of the belly the largest, ovate and keeled. The scales on the side of the pouch are rather smaller than the others, and those on the pelvis and round the vent are uniformly granular. The tail is rounded, not verticillated or crested, but very slightly compressed in the upper part of the middle of its length. All the scales are sexangular, of moderate size, strongly keeled, the keels forming longitudinal ridges.

The fore-leg does not, or scarcely, reach to the loin, if laid backwards; it is covered with minute keeled scales, with granulations inferiorly. The inner finger is not dilated; the fourth is the longest; then follow, in the order of their length, the third, fifth, second, and finally the first. The total length of the hind-leg appears to vary according to age or sex; it reaches to the humeral joint only in the largest of the specimens, and to the anterior margin of the orbit in the smaller ones. It is covered with minute scales, the anterior ones being keeled.

Nothing can be said of the coloration during life. The ground colour of the upper parts is now a greyish- or brownish-olive, with several indistinct broad bands across the back, and rings of the same colour round the tail; the lower parts are whitish, speckled with brown between the hind-legs; in the largest specimen the throat (not the pouch) and the lower side of the tail are brown.

This is one of the largest species of the genus, as will appear from the following measurements:—

	inches. lines.	
Distance between tympanum and the extremity of the snout .....	1	4
Distance between tympanum and vent.....	3	8
Length of the tail .....	11	0
Total length .....	16	0

10. *LIOCEPHALUS ORNATUS*, Gray, Catal. p. 219.

The specimens sent by Mr. Fraser belong to a variety of this species, without spots before the shoulder, and with a broad black gular band in very old individuals.



## 11. LIOCEPHALUS IRIDESCENS, n. sp. (Pl. XX. fig. B.)

The upper surface of the head covered with scales, without distinct shield; shoulder and throat without any fold. Scales of the upper parts distinctly keeled, of the belly nearly smooth. Above greenish-brown, with a dorsal series of black angular transverse streaks; a black collar.

*Description.*—The head is rather short and high, above slightly convex, with the interspace between the bony orbits very narrow, and with the muzzle rather short, blunt, and rounded in front; the distance between the extremity of the snout and the anterior margin of the eye is equal to the distance between the anterior angles of the orbits. The nostril is directed upwards, round, situated more on the upper surface of the head than on the side, and formed by a tubular opening at the posterior extremity of a single small shield. The eye is of moderate size, with round pupil and an upper and a lower eyelid. The cleft of the ear is subelliptical, a little behind the cleft of the mouth and in front bordered by some small prominent scales. All the upper surface of the head is covered by scale-like imbricate shields, the two hindmost of which (on the sides of the occiput) are the largest; two series of these shields cover the space between the bony orbits, the roof of the orbit itself being formed by a series of five shields, and by small scales anteriorly and externally. Some of these head-shields exhibit feeble keels. The rostral shield is very low, but broad, covering all the anterior margin of the jaw; four very narrow upper labials, above which is situated another series of similar shields, the loreal region being irregularly shielded. The temples are covered with scales similar to those on the neck. The lower front labial is higher, but shorter, than the rostral; five narrow lower labial shields, internally to which are two other series of small oblong shields; there are two diverging series of broad shields arising from the posterior part of the front labial, passing posteriorly into the ordinary scales of the throat; all the throat is covered with smooth imbricate scales, similar in size and form to those of the belly.

The trunk is subquadrangular, slightly depressed, and covered with rhombic scales of moderate size, keeled, and arranged in series which converge towards the vertebral line. There is a serrated and rather low crest from the neck along the back, which is lost near the middle of the tail. The scales on the belly form oblique series, and are smooth or very indistinctly keeled. No præanal pores, the space before the vent being scaly like the belly. The tail is slightly compressed and covered with scales, arranged and shaped like those of the back, but rather more strongly keeled. The scales of the extremities also do not differ from the others. The fore-leg reaches to the loin, if laid backwards: the fourth finger is very little longer than the third; the second and fifth are considerably shorter, and nearly equal in length to each other; the first is the shortest. They are smooth above, rough beneath, and provided with claws of moderate strength. The hind-leg reaches rather beyond the anterior



margin of the eye, if laid forwards; the toes have the usual relative length of the species of this genus. No femoral pores.

The ground colour of the upper parts is shining brownish-green, darker on the sides; a series of black cross-stripes, angularly bent, and with the angle pointing backwards along the middle of the back; they are more distinct in young than in old individuals; the extremities have some indistinct irregular brown spots: there is, in some of the old specimens, a lighter stripe from above the tympanum along the side of the back to the origin of the tail. A black gular band, with some black dots besides, is complete in mature specimens, indicated by two black lateral spots only in young ones; the throat before the collar is beautifully iridescent, the chest behind it intensely yellow, and the belly and the anterior lower portion of the tail rose-coloured. The latter colours are merely indicated in very young specimens.

	inches.	lines.
Distance between the extremity of the snout and the tympanum.....	0	8
Distance between the tympanum and the vent ..	2	4
Length of the tail .....	6	0
Distance between the extremity of the snout and the anterior margin of the orbit .....	0	3½
Distance between the anterior angles of the orbits	0	3½
Length of the entire fore-leg .....	1	4
——— of the fourth finger .....	0	5
——— of the entire hind-leg .....	2	4
——— of the foot .....	1	2
——— of the fourth toe.....	0	9

## 12. IGUANA TUBERCULATA, Laur.

## 13. GYMNODACTYLUS CAUDISCUTATUS, n. sp.

*Diagnosis.*—Scales of the back and of the sides granular, of the belly rhombic and imbricate. The lower part of the tail with broad shields, extending from one side to the other: five upper labials. Snout rather depressed, nearly twice as long as the distance between the eyes. Head white, reticulated with black.

*Hab.* Andes of Ecuador.

*Description.*—This species is allied to *Homonota gaudichaudi* and *Gymnodactylus d'orbignyi*, from which it may be distinguished by the caudal shields. The head and snout, the latter especially, are much more depressed than in *H. gaudichaudi*, and appear also more produced. The rostral shield is large, rounded, extending on to the upper surface of the head; the upper lip is bordered by five plates, all the upper surface of the head and the sides being granular. The lower median labial shield is oblong, far produced backwards, and has a pair of small shields behind: there are three lower labials. The ear-opening is small, situated horizontally on the same level with the cleft of the mouth. All the upper and lateral parts are granu-

lar, the granulations of the posterior part of the back being a little more scale-like. The belly and the inner side of the extremities have rhombic, imbricate scales. The shields of the lower side of the tail are narrow, broad, extending from one side to the other. No præanal or femoral pores.

The fore-leg, if laid forwards, reaches beyond the anterior margin of the orbit. The fingers are slender, of moderate length: the first is the shortest, then comes the second, the third, and finally the fourth and fifth, which are nearly equal. The hind-leg, if laid forwards, reaches to the humeral joint. The toes are similar to the fingers: the first is the shortest, then comes the second, then the third and fifth, which are equal in length, and finally the fourth, which, although the longest, does not extend beyond the tip of the third.

The teeth are small: the palate is toothless.

The ground colour is greyish or brown. Some of the specimens (the light-coloured ones) have a lighter dorsal streak, with pairs of brown spots; the brown specimens have the dorsal streak and spots indistinct, but are irregularly spotted with bluish, each spot being edged with darker colouring. The head of all is whitish, with symmetrical, reticulated black lines, one from the eye towards the snout being very constant. Chin, throat, and breast white, the throat sometimes speckled with black; the belly greyish; the lower parts of the tail grey.

	inches. lines.	
Distance between the extremity of the snout and the tympanum.....	0	5
Distance between the tympanum and the vent ..	1	4
Length of the tail .....	1	6
Total length.....	3	3

## OPHIDIA.

### 1. RHABDOSOMA CRASSICAUDATUM, Dum. and Bibr. p. 103.

A single specimen, with the back uniform lead-coloured, which colour extends on the sides of the belly; the middle of the belly uniform yellowish.

### 2. RHABDOSOMA MACULATUM, Gthr. Colubr. Snakes, p. 241.

There are some beautiful specimens of this species in the collection, one of which is twenty-three inches long. The light ground colour becomes darker with age, and is changed into light brown; consequently the brown spots become less distinct, are more dilated, and the white edges nearly lost. Brownish spots appear sometimes on the belly.

### 3. RHABDOSOMA ELAPS, Gthr. Colubr. Snakes, p. 241.

## 4. STREPTOPHORUS DROZII, Dum. and Bibr. p. 518.

A single specimen, which belongs to a very distinct variety; the collar is absent; the body uniform black above, and brownish below.

## 5. HOMALOCRANIUM MELANOCEPHALUM, L.

## 6. CORONELLA DECORATA, Gthr. Colubr. Snakes, p. 35.

A single specimen, which somewhat differs in colour from those described before,—the back and the sides of the belly being greyish-black, and the yellow lateral band on the anterior part of the trunk being reduced to three spots on each side of the head and neck.

## 7. LIOPHIS COBELLA, L.

A single small specimen.

## 8. LIOPHIS TENIURUS, Tschudi, Faun. Peruan. Herpetol. p. 51. tab. 5 (not good).

9. HERPETODRYAS FUSCUS, L., young, = *Dendrophis viridis*, Dum. and Bibr. p. 202. pl. 79; cfr. Gthr. Colubr. Snakes, p. 114.

## 10. HERPETODRYAS BRUNNEUS, Gthr. Colubr. Snakes, p. 116.

## 11. HERPETODRYAS RAPPII, Gthr. Colubr. Snakes, p. 116.

Three examples, which differ from the typical specimens in having one upper labial shield less, the anterior two being united into one; they all have the dark streak through the eye distinct. In one of the specimens, thirty-one inches long, the three series of quadrangular spots continue to be distinct, whilst they have nearly disappeared in another of forty-one inches length; this specimen has, however, a pair of lighter indistinct longitudinal streaks, like some specimens of *Herpetodryas boddarti*, running along the line where the dorsal series of spots meets the lateral one. The throat in these two specimens is spotted with black—not entirely black. The third specimen, of thirteen inches length, is beautifully preserved; the ground colour of the back is white, and all the spots are of a deep black; the belly is black, with scattered white spots.

## 12. AHÆTULLA OCCIDENTALIS, n. sp.

*Diagnosis*.—Loreal shield none; eight upper labials, the fourth and fifth coming into the orbit; the length of the snout equals the distance between the eyes. Scales in fifteen rows, those of the back keeled. Uniform green, rather darker on the back; an indistinct blackish temporal streak.

*Hab.* The western parts of tropical South America (Ecuador, Guayaquil, New Granada, Peru, Chile).

This species has been confounded with the most common tree-snake of eastern South America, *Ahætulla liocercus*. Schlegel mentions a uniformly greenish variety of the latter from Chile (Essai, ii. p. 226), undoubtedly identical with the present one. On a former

occasion I did not venture to separate a single specimen from Guayaquil, in the collection of the British Museum, and in a bad state of preservation, from the common species (Catal. Col. Snakes, p. 153, spec.  $\alpha$ ) ; but now, having found a very fine individual in Mr. Fraser's collection, I can no longer doubt its specific difference. The most striking character is the number of the upper labials, which in *A. liocercus* is nine, the fourth and fifth coming into the orbit. It is true that there occur scarce specimens of *A. liocercus* which have one upper labial less, so far agreeing with *A. occidentalis* ; but the relative length of the snout, nevertheless, remains the same. As the snout and the head are considerably shorter in *A. occidentalis*, so are the trunk and the tail ; it is altogether a stouter snake. Corresponding to this, the scales are less elongate, especially those of the outer rows, which are nearly rhombic. Further, the coloration is nearly uniform, as in *Philodryas viridissimus*, the belly not being white—merely of a lighter greenish than the back. The lips and the chin, which are white in *A. liocercus*, are greenish ; and the black streak through the eye in *A. liocercus* is here indicated only by a blackish temporal streak. These differences *together* induce me to separate the two species, which in the dentition agree with each other, although the teeth of *A. occidentalis* appear to be rather stronger and more widely set.

The numbers of the plates are as follows :—

	Ventrals.	Caudals.
In <i>A. liocercus</i> from New Granada* . . . . .	166	158
In <i>A. liocercus</i> from Demerara . . . . .	166	163
In <i>A. occidentalis</i> from Guayaquil . . . . .	172	133
In <i>A. occidentalis</i> from Ecuador . . . . .	160	130

This similarity in the number of the ventral shields appears to contradict my statement of *A. occidentalis* having a stouter trunk than *A. liocercus* ; but there is a remarkable difference in the form of those shields : *their length is one-half only of their width in A. liocercus, whilst it is nearly one-fourth in A. occidentalis.*

Therefore the diagnosis of *Ahætulla liocercus* will now be :—

Loreal shield none ; nine upper labials, the fifth and fourth coming into the orbit (exceptionally, the second and third united) ; the length of the snout is more than the distance between the eyes. Scales in fifteen rows, those of the back keeled. Green above, white beneath. A black streak through the eye ; the upper lip white.

Berthold, *l. c.*, describes *Dendrophis liocercus* from New Granada, and it appears to me as if that specimen also ought to be referred to *A. occidentalis*. He describes the body as slender, though rather stout. "One would take it for a *Herpetodryas*, the body being at least twice as thick as in *D. liocercus* ; the head also is much broader. The colour is uniform leek-green ; belly and margins of the ribs yellowish-green."

### 13. LEPTODEIRA (DIPSAS) ANNULATA, Schleg.

\* Berthold, Ueber Reptilien aus Neu Granada, p. 11.



14. *LEPTOGNATHUS MIKANII*, Mus. Vienn.

The specimens in the collection are darker-coloured than usually; some have additional præoculars, some not; and all have three pairs of chin-shields, which do not differ in form from those of the Brazil specimens. The lateral blotches extend on the belly, which is densely marbled with black, and posteriorly entirely black. The white edge of the dorsal spots is scarcely visible.

15. *LEPTOGNATHUS CATESBYI*, Weigel.16. *OXYRHOPUS PLUMBEUS*, Wied.

Scales in seventeen series, those of the dorsal series being distinctly larger. In two of the specimens the loreal shield is united with the posterior frontal.

17. *OXYRHOPUS PETOLARIUS*, L.

A single specimen of a variety, apparently not yet recorded, has been sent by Mr. Fraser. The scales of the dorsal series are a little larger. The muzzle and crown are black, the neck red. The body and tail are surrounded by thirty-three black bands, a little broader than the red interspaces between.

18. *ELAPS SEMIPARTITUS*, Dum. and Bibr. p. 1220.

A single beautiful specimen with the colours preserved, thirty-one inches long. The occipital region is light vermilion. The ground colour of the trunk is yellowish-white and appears in very narrow rings, which occupy two scales superiorly and two plates inferiorly; the ground colour of the tail is dark vermilion and forms rather broad bands. The trunk is encircled by seventy-six black rings, the tail by four.

19. *CRASPEDOCEPHALUS ATROX*, L.

One of the young specimens has a whitish tail (*Cr. leucurus*, Dum. and Bibr. p. 1508).

20. *CRASPEDOCEPHALUS BILINEATUS*, Wied.

A single adult specimen of this scarce snake is in the collection.

21. *LACHESIS NITIDUS*, n. sp. (Pl. XX. fig. C.)

*Diagnosis*.—Nasal single; eight upper labials, the second forming the anterior margin of the loreal pit; a series of rough scales between the superciliary and the orbital margin; all the caudal plates simple. Twenty-two series of scales. Greenish-brown, speckled with black; pairs of darker spots along all the back, the spots of each pair confluent on the vertebral line, laterally including a red, superiorly yellow spot; the yellow parts alternating with those of the other side. A yellow longitudinal band along the two outer series of scales. Belly yellow along the middle, brownish-green on the sides, the latter parts being spotted with red and speckled with black.

*Hab.* Western Andes of Ecuador.



*Description*.—Little can be added to the diagnosis of this beautiful species, the colours of which are exceedingly well preserved. The upper part of the head is entirely covered with keeled scales, those on the canthus rostralis being rather larger. The eyebrow is covered with an elliptical shield, separated from the orbital margin by a series of rough scales, as in *Trigonocephalus schlegelii*. The scales of the trunk and tail are strongly keeled. One hundred and fifty-four abdominal, one entire anal, and sixty-five undivided caudal plates. The yellow median line on the belly disappears on the tail, where the lateral streak also is interrupted by the red spots.

	inches. lines.	
Length of the head . . . . .	0	9
— of the trunk . . . . .	13	0
— of the tail . . . . .	3	0
Total length . . . . .	16	9

### BATRACHIA.

1. CYCLORHAMPHUS MARMORATUS, Dum. and Bibr. p. 455.
2. BUFO AGUA, Latr.
3. BUFO INTERMEDIUS, Gthr.
4. BUFO CÆRULEOSTICTUS, n. sp.

*Diagnosis*.—Crown of the head without bony enlargement, broad, flat. Parotids narrow, oblong, parallel to the vertebral line; tympanum not visible externally. Toes half-webbed; the third finger longer than the fourth. Tarsus with a cutaneous fold. Uniform brownish-black; the posterior part of the sides and the extremities with small, smooth, bluish tubercles.

*Description*.—The skin of this species is comparatively smooth, there being small and smooth tubercles on the sides of the body only and on the extremities, a few also on the upper eyelids. The head is large and broad, with the sides nearly vertical, with the canthus rostralis angular, and with the upper surface quite flat. The snout is rather short and truncated. The tympanum is not visible; the interior nostrils and the eustachian tubes are small. The tongue is ovate, with the posterior half free. The parotid is narrow, elongate, nearly as long as the head, and situated in a line parallel to the vertebral column. The extremities are more slender than usually in this genus; the total length of the anterior extremity equals the distance between the vent and the ear. The first (interior) finger is the thickest, longer than the second, but rather shorter than the fourth; the third and fourth are united at the base, the third being the longest; the metacarpus with two tubercles, the interior of which at the root of the thumb is elongate, the exterior broad, rounded. The length of the posterior extremity, from the hip to the carpal joint, equals the length of the animal from the snout to the vent;

the tarsus has a cutaneous fold, the metatarsus two tubercles. The toes are half-webbed, the third and fifth being equal in length.

The colour of the upper parts is a uniform brownish-black, of the lower parts a dirty greyish-brown; the upper eyelids, the sides of the trunk, and the extremities exhibit small, smooth, bluish tubercles.

Two specimens are in the collection.

	inches. lines.	
Length from the snout to the vent.....	3	6
Length of the head .....	0	11 $\frac{1}{2}$
Breadth of the head.....	1	3 $\frac{1}{2}$
Length of the parotid.....	0	9
—— of the anterior extremity .....	2	6
—— of the third finger .....	0	8
—— of the posterior extremity .....	4	9
—— of the fourth toe.....	1	5

#### 5. OTILOPHUS MARGARITIFER, Laur.

#### 6. HYLODES UNISTRIGATUS, n. sp.

*Diagnosis.*—Habit as in *Hyla arborea*. Skin smooth above, granular on the sides and on the belly; a fold across the chest. Vomerine teeth in two oblique series; tongue ovate, with an exceedingly slight nick behind. Olive (in spirits), marbled with darker; a fine white dorsal line from the snout to the vent.

*Description.*—This species would be taken for a *Hyla* at the first glance: the snout is rather short and rounded anteriorly and over the canthus rostralis; the tongue is ovate, with the posterior two-thirds free, and with a scarcely visible nick. The vomerine teeth are arranged apparently in two oblique series, but can scarcely be distinguished on account of the small size of the species. The width of the tympanum is one-third of that of the eye. There is a distinct fold across the chest, as in many species of *Hyla*. The extremities are short, the disks of the fingers and toes of moderate size; the fifth toe is rather longer than the fourth. The upper parts are dark olive, marbled with brown; a fine white dorsal line reaches from the tip of the snout to the vent; the lower parts are whitish, the throat marbled with brown.

There are several specimens in the collection, among which is an adult female, with the eggs comparatively as large as in *Hyloides conspicillatus*.

	inches. lines.	
Length from the snout to the vent.....	1	1
—— of the anterior extremity .....	0	7 $\frac{1}{2}$
—— of the posterior extremity .....	1	4

#### 7. HYLODES CONSPICILLATUS, Gthr. Batrach. p. 92.

There are many specimens of this species in the collection, and among them two varieties: the one with a white margin on the upper lip, the other with a white lateral stripe from the tip of the muzzle above the eye to the loin.

8. *NOTOTREMA MARSUPIATUM* (*Hyla marsupiatata*, Dum. and Bibr.), Gthr. Batrach. p. 115.

This species grows to a larger size than was hitherto known, there being specimens in the collection the body of which measures three inches, and the posterior extremity four inches and a half. In such very large specimens the crown of the head becomes rough, as in *Trachycephalus*, although without ridges, and with the skin not firmly adherent.

9. *PHRYNISCUS LÆVIS*, Gthr. Batrach. p. 43.

This species is subject to such variation of colour, that it may prove to be identical with *Phryniscus varius*, which perhaps has been established from specimens which had lost the prickles on the sides. Among the numerous specimens sent by Mr. Fraser are several of a dark bluish-green ground-colour, and with green spots on the back. Others are greenish-grey, with the back spotted with black and yellow; each phalanx with a green spot. Others are intermediate between these and the black variety.

#### CÆCILIE.

1. *CÆCILIA ROSTRATA*, Cuv.

The habitat of this scarce species has not been hitherto known with certainty.

2. *CÆCILIA GRACILIS*, Shaw.

The circular folds are more distinct than is stated by Duméril, but become very inconspicuous towards the anterior part of the body. The length is to the diameter of the body as 115 : 1.

3. *CÆCILIA PACHYNEMA*, n. sp.

*Diagnosis*.—The length of the body is to its greatest diameter as 92 : 1; body with 168 folds; muzzle depressed, rather truncated anteriorly; posterior extremity of the body obtusely rounded, very short behind the vent.

*Description*.—This species, which is based on a single specimen in the collection, belongs to those with the body elongate, and is distinguished from *C. gracilis* by having the folds very distinct from behind the head. The folds do not reach entirely round the body, being smoothed down on the dorsal and ventral side. The body is covered all over with rudimentary scales, which have more the appearance of minute granulations. The folds on the posterior portion of the body are not deeper than the others, nor do they contain any scales, as in *C. gracilis*. The head is depressed, with the muzzle obtusely rounded or rather truncated anteriorly, although overlapping the anterior portion of the cleft of the mouth. The latter is wide, reaching as far backwards as the head. The upper and the lower jaws are armed with five hook-like teeth, directed backwards on each side, the anterior of which (and, among these, those of the mandibula) are the strongest. The palate has three similar teeth on each side. I cannot find any

prominences on the tongue, nor distinguish the eyes. The vent is close to the posterior extremity of the body, which is bent downwards over it.

The colour is a blackish-ash; there is a whitish blotch between every pair of folds all along the side of the body.

	inches.	lines.
Total length .....	34	6
Greatest diameter of the body .....	0	$4\frac{1}{2}$
Length of the head .....	0	$8\frac{1}{2}$
Width of the head.....	0	5
Length of the cleft of the mouth .....	0	6

## PISCES.

1. *LEMBUS MACULATUS*, Gthr. Acanthopt. Fishes, i. p. 505.

2. *CHROMIS RIVULATA*, n. sp.

D.  $\frac{13}{11}$ . A.  $\frac{3}{8}$ . L. lat. 28. L. transv.  $\frac{3}{9}$ .

Nape of the neck convex; the upper profile of the head is straight, abruptly descending. The total length is three times the height of the body, and  $3\frac{2}{3}$  times the length of the head. The width between the orbits equals  $1\frac{1}{2}$  diameters of the eye. The posterior dorsal and anal rays reach to the middle of the caudal, if laid backwards, and the ventral to the second anal spine. Greyish-green, with broad dark vertical bars, less distinct with age. A black blotch below the lateral line, corresponding to the last four dorsal spines; præorbital and cheeks with oblique, waving, bluish, shining silvery streaks; the scales of the operculum and of the anterior part of the body with spots of the same colour. Dorsal fin with dark longitudinal streaks; ventral and anal greyish; pectoral and caudal colourless.—Several specimens of different ages; the largest 4 inches long.

3. *LEBIASINA BIMACULATA*, Cuv. et Val.

4. *MACRODON TAREIRA*, Cuv. et Val.

5. *LEPORINUS FREDERICI*, Bloch.

6. *ANODUS TROSCHELII*, n. sp.

D. 12. A. 10. V. 9. L. lat. 46. L. transv.  $\frac{7}{8}$ .

The total length is four times the height of the body, and  $4\frac{2}{3}$  times the length of the head. The width of the space between the eyes is not quite one-half the length of the head; the diameter of the eye is one-fourth of it. The height of the dorsal is much less than the length of the head, and its origin corresponds to the fourteenth scale of the lateral line; the base of the ventrals falls vertically below the middle of the dorsal. Silvery, back greenish; a black spot on the root of the caudal.

*Hab.* Western Andes of Ecuador.



	inches.	lines.
Total length . . . . .	5	5
Height of the body . . . . .	1	4
Length of the head . . . . .	1	2
Width between the orbits . . . . .	0	5½
Diameter of the eye . . . . .	0	3½
Height of the dorsal . . . . .	0	11
Height of the anal . . . . .	0	7

There can be no doubt that this is quite a different species from *Anodus alburnus*, described and figured by Müller and Troschel in the 'Horæ Ichthyologicæ.' The difference from *Curimatus gilberti*, figured by Quoy and Gaimard, and insufficiently described by Valenciennes, must be rather inferred, by help of the figure of *Anodus alburnus*. Valenciennes describes it as a fish of entirely the same form as *A. alburnus*; therefore it is very improbable that our species is identical with it, as it has the back very little elevated (as in *Leuciscus vulgaris*), the dorsal fin much lower and situated far more backwards, so that its end falls vertically as much behind the ventral as its origin before it. The somewhat greater number of the scales of the lateral line corresponds with these differences.

#### 7. PROCHILODUS HUMERALIS, n. sp.

D. 12. A. 11. V. 10. L. lat. 33. L. transv. 5/7.

The total length is  $3\frac{4}{5}$  times the height of the body, and nearly five times that of the head. The width between the eyes is one-half the length of the head, or nearly twice the diameter of the eye; the end of the dorsal falls vertically above the end of the base of the ventral. Back greenish, sides and belly yellowish; each longitudinal series of scales with a shining streak. A black spot behind the shoulder on the fourth, fifth, and sixth scales of the lateral line. No spot on the root of the tail; dorsal dotted with blackish posteriorly; the other fins immaculate.

*Hab.* Western Andes of Ecuador.

	inches.	lines.
Total length . . . . .	6	0
Height of the body . . . . .	1	7
Length of the head . . . . .	1	3
Width between the orbits . . . . .	0	7½
Diameter of the eye . . . . .	0	4
Length of the third dorsal ray . . . . .	1	0
Length of the third anal ray . . . . .	0	10

#### 8. CHALCEUS ALBURNUS, n. sp.

D. 11. A. 35. V. 8. L. lat. 60. L. transv. 13/5.

The height of the body is one-fifth of the total length, the length of the head one-fourth. The width between the orbits is rather more than that of the eye, and one-fourth the length of the head. The snout is produced, and equals  $1\frac{1}{2}$  diameters of the eye. Anterior teeth rather small; several of the lateral teeth of the mandibula much



stronger than those of the upper jaw. The ventral fin reaches to the origin of the anal, the pectoral somewhat beyond the base of the ventral. Scales very thin; the lateral line descends abruptly above the pectoral towards the belly, and runs much nearer to the abdomen than to the back. Silvery, with a light blackish spot behind the shoulder, above the lateral line; caudal red.

*Hab.* Western Andes of Ecuador.

	inches.	lines.
Total length .....	5	3
Height of the body .....	1	1
Length of the head .....	1	4
Width between the eyes .....	0	4
Diameter of the eye .....	0	3 $\frac{1}{2}$
Height of the dorsal .....	0	9 $\frac{1}{2}$
Height of the anal .....	0	7 $\frac{1}{2}$

One of the specimens has blackish vertical lines all along the side, and the fins broadly margined with blackish. Another has the ventral fins very short, only half the usual length, though with the full number of rays.

9. *CHALCEUS BREVIROSTRIS*, n. sp.

D. 11. A. 37. V. 8. L. lat. 46. L. transv. 6/7.

The height of the body is one-fourth of the total length, the length of the head one-fifth. [The width between the orbits equals the diameter of the eye, and is rather more than the extent of the snout\*.] The snout is short and obtuse, the upper maxillary slightly overreaching the vertical from the anterior margin of the eye. The anterior teeth are the strongest, those of the lower jaw much stronger than the upper ones. The ventral fin reaches to the origin of the anal, the pectoral somewhat beyond the base of the ventral. Scales very thin. The lateral line descends in a gentle curve from its origin, and runs a little nearer to the ventral margin than to the dorsal. Shining silvery, with an indistinct lateral band, continued to the middle of the caudal margin, where it is black.

*Hab.* Western Andes of Ecuador.

	inches.	lines.
Total length .....	2	7
Height of the body .....	0	7 $\frac{1}{2}$
Length of the head .....	0	6
Diameter of the eye .....	0	2

10. *PIMELODUS*, sp.?

A single mutilated specimen.

11. *HYPOSTOMUS ERINACEUS*, Cuv. & Val. = *Chaetostoma lobarhynchus*, Tschudi, Faun. Peruan. Ichth. p. 29. tab. 4.

D.  $\frac{1}{9}$ . A.  $\frac{1}{3}$ .

\* These statements may require modification upon examination of mature specimens, as those collected by Mr. Fraser are perhaps young ones.

8. DESCRIPTION OF A NEW SPECIES OF ANOLIS FROM CENTRAL AMERICA. BY DR. A. GÜNTHER, FOREIGN MEMB. ZOOL. SOC.

The following new species of *Anolis* was discovered by M. Sallé in Central America, and is now in the Collection of the British Museum.

*ANOLIS SALLÉI*, n. sp.

*Diagnosis*.—Snout moderately elongate and rather depressed, with the canthus rostralis sharp, and with a pair of obtuse ridges, arising from the bony superciliary margins and divergent anteriorly; a slight groove between these two ridges; the upper surface of the head is covered with small shields; occipital shield present. Loreal region slightly concave, with four series of small shields. Scales of the back, belly, and tail distinct, imbricate, strongly keeled; those of the sides very small; no trace of a crest; tail rounded, not verticillated; gular pouch small. Greyish or brownish, with a more or less distinct yellowish vertebral band; sides and belly sometimes with fine blackish longitudinal lines.

*Description*.—The snout is moderately depressed and slightly elongate, the distance between the anterior angles of the orbits being a little less only than that between the orbit and the extremity of the snout. The canthus rostralis is distinct and, near the orbit, rather sharp. There is another pair of low ridges, arising from the bony superciliary margin and divergent anteriorly, with a slight groove between; they extend to the middle of the length of the snout. The shields of the upper surface of the head are small, arranged in irregular transverse series, about seven in the series between the angles of the orbit; the shields along the bony superciliary margin are rather larger, but both series are separated from each other by smaller shields. An occipital shield is distinct. The nostril opens laterally, and is situated immediately behind the extremity of the snout. The labial shields are exceedingly narrow, eight or ten in number; three or four series of smaller shields run parallel to that of the lower labials, the remainder of the throat being covered with very small polygonal scales. The pouch of the throat is very little developed. The tympanum is very small. The temple and the neck are granular.

No crest whatever is visible, but the scales of the back are very distinct, imbricate, keeled; those of the sides are one-half smaller and smooth; those of the belly rhombic and distinctly keeled, rather larger than the dorsal ones. The tail is rounded, not verticillated or crested, covered with rhombic, imbricate, strongly keeled scales, the keels forming longitudinal ridges. The fore-leg does not reach to the loin, if laid backwards; it is covered with rhombic keeled scales, and with minute smooth ones inferiorly; the fingers are slightly dilated; the fourth is very little longer than the third, then follow the fifth, the second, and the first. The hind-leg reaches beyond the tympanum, if laid forwards; it is covered with keeled

scales, except the inferior and posterior sides of the humerus, which are granular.

The ground colour of the upper parts is greyish or brownish, darkest along the margins of the vertebral band; a broad yellowish or yellow dorsal band reaches from the occipital shield to the tail, where it is gradually lost. The lower parts are whitish. In one of the two specimens, the sides, the belly, and the lower part of the tail are longitudinally lined with blackish.

	inches.	lines.
Distance between the tympanum and the extremity of the snout.....	0	5 $\frac{2}{3}$
Distance between the tympanum and the vent ..	1	4
Length of the tail .....	4	0
Distance between the extremity of the snout and the anterior margin of the orbit .....	0	2 $\frac{2}{3}$
Distance between the anterior angles of the orbit	0	2 $\frac{1}{3}$
Length of the fore-leg .....	0	8
———— of the hind-leg .....	1	3

9. DESCRIPTIONS OF BUTTERFLIES FROM THE COLLECTION OF  
MR. WALLACE. BY W. C. HEWITSON.

(Annulosa, Pls. LXVI. LXVII.)

PAPILIONIDÆ.

1. PAPILIO PARADOXA, var. (Pl. LXVII. figs. 1, 2, 3, and Pl. LXVI. fig. 4.)

*Zelima paradoxa*, Zinken Sommer, pl. 15.

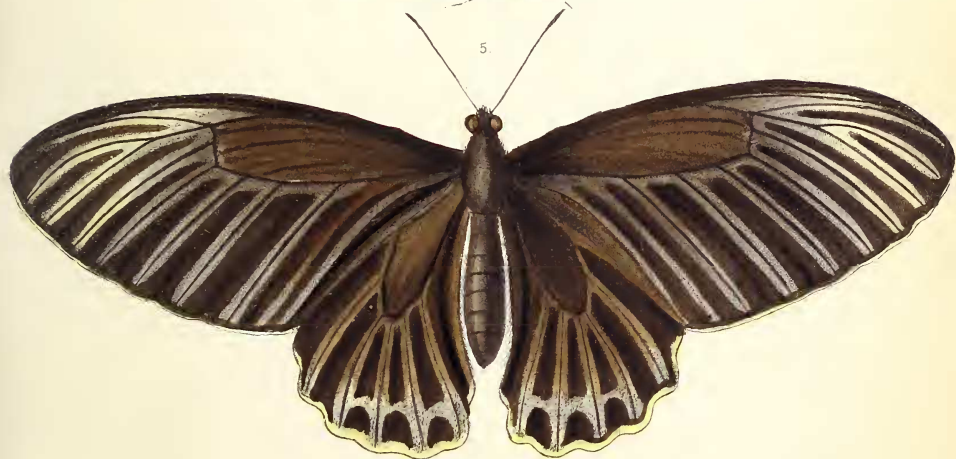
*Papilio paradoxus*, Westw. Orient. Ent. pl. 9.

*Papilio telearchus*, Hewitson, Trans. Ent. Soc. ii. n. s. pl. 6.

Upper side of male (fig. 1) dark brown; both wings with a submarginal band of white spots; anterior wing with its outer half glossed with blue; two spots within the cell, one near the costal margin and one near the costal margin beyond the middle, light blue.

Under side of a uniform rufous-brown, with the submarginal spots as above.

Female (fig. 2) rufous-brown; both wings with a submarginal band of white spots as in the male. Anterior wing with its outer half dark brown glossed with blue; a longitudinal ray and two spots of white within the cell; a transverse curved band of hastate white spots tinted with blue beyond the middle; two rays of dirty white forming a triangle near the inner margin; the margin itself of the same colour. Posterior wing with a loop-ray of white within the cell, and similar rays between the nervures, each ray having at its termination a lunular spot also white; the outer margin spotted with white; under side as above, except that there is no blue.









*Variety A, female* (fig. 3).

Dark brown; both wings with a submarginal band of white spots; anterior wing with two white spots within the cell, and five large white hastate spots near the apex; posterior wing with the outer margin spotted with white.

*Variety B, female* (fig. 4).

Anterior wing dark brown; posterior wing rufous-brown, with a ray of lighter brown within the cell and between each of the nervures; a submarginal band of rufous lunules; the outer margin spotted with white.

Expanse, ♂ 4 inches, ♀  $4\frac{7}{10}$  inches.

*Hab.* Borneo.

Widely as the four Butterflies figured in the two plates differ from each other, I have little doubt that they are of the same species, —varieties of *paradoxa* of Zinken Sommer, and also of *telearchus* of Hewitson.

The typical *paradoxa* is from Java. The insects now described were taken in Borneo by Mr. Wallace. *Telearchus* is a native of Sylhet.

2. *PAPILIO NOCTIS*, Hewitson. (Pl. LXVI. figs. 5, 6.)

Upper side of female dark brown; all the nervures, except those which enclose the cell, margined with lighter colour, with white near the apex of the anterior wing and the outer margin of the posterior wing; posterior wing with a band of dirty white near the outer margin; outer margin of both wings light yellow.

Under side as above, except that the margins of the nervures of the anterior wing are whiter, and that the outer margin of the posterior wing is broadly cream-colour, marked with a double row of black spots.

Expanse  $4\frac{9}{10}$  inches.

*Hab.* Borneo.

I had at first named this Butterfly *Papilio nox*, believing it only a variety of that species. Having since seen several females of *nox*, none of which have either the light margin or black spots of the posterior wing of this insect, I have thought it better to consider it at present as a distinct species; I have not, however, done so to follow in the steps of those who give names to varieties, because I think that custom entirely indefensible.

The Butterflies of the East seem to be subject to vary more than those of other countries.

It is usual amongst entomologists to argue, that if two insects, however closely resembling each other, come from distant localities, they must be distinct species. I would reverse the argument and say, that two insects, differing but slightly, are most likely distinct species if they come from the same locality; but if they come from a distance, they are most likely the same species changed by the

difference of locality. Those localities need not be far distant from each other to produce the variety, if the sea divides them.

10. ON A NEW SPECIES OF THE FAMILY PAPILIONIDÆ FROM  
BATCHIAN. BY GEORGE ROBERT GRAY, F.L. & Z.S., ETC.

(Annulosa, Pls. LXVIII. LXIX.)

In the Catalogue of the family of *Papilionidæ*, which I formed on the specimens contained in the Collection of the British Museum, I enumerated several species that belong to the subdivision *Ornithoptera*, which had previously been considered as only varieties of *Papilio priamus*. It now falls to my lot to add another splendid species (also supposed by some entomologists to form only a further variety of that insect), sent by the indefatigable collector and naturalist, Mr. A. R. Wallace, from the Island of Batchian, one of the Moluccas.

The beautiful golden colour of the insect about to be described, has induced the discoverer to propose for it the name of *Ornithoptera cræsus*, which I have adopted. I should otherwise have called it after Mr. Wallace himself, as a slight record of the valuable services he has rendered to entomology during his sojourn amongst the Eastern Isles. I am further led to describe this insect as distinct from any hitherto recorded, as, after a careful comparison with all the others, many peculiarities can be pointed out, which will be incorporated in the following account.

PAPILIO (ORNITHOPTERA) CRÆSUS.

Primary wings deep black, with the anterior band widening towards the middle, and this is of a golden orange-colour; this colour is also represented by an abbreviated band at the base of the inner margin, and by a few scattered specks on the inner and outer margins.

Secondary wings of a dull orange-colour, with some spots of kings-yellow; this difference of colour is occasioned by the semitransparency of the more decided spots of the under surface of the wings when the insect is held against the light; the base, subcostal and medial nervures, first subcostal nervules, and the narrow edge on the outer margin are deep black. A black spot is sometimes found between the second and the first discoidal nervules.

The under surface of the primary wings is most like that of *Ornithoptera richmondia* in the form of the markings, but they are of a rich golden-green.

The under surface of the secondary wings also closely approaches that of *Ornithoptera richmondia*; but it is of a golden-green, with a lengthened spot of rich kings-yellow above the black spot between the costal nervure and the first nervule, and a small spot below the black spot; the same kind of yellow spot above and below the black spot in each space between the first and second nervules







and the second and first discoidal nervules ; the next two black spots with a yellow spot beneath each : in the discoidal cell is placed a lengthened spot of kings-yellow. The anal angle kings-yellow, without any black spot such as is found in the other species. The base, nervures, and narrow margin deep black.

Length across the primary wings  $6\frac{1}{2}$  inches.

Mr. Westwood has remarked, that he was not sure whether the present insect "might not be a local variety of *Ornithoptera priamus*." I will, however, point out some dissimilarities, which induce me to differ from so high an authority. The form of the primary wings appears rather shorter and thereby broader than in *O. priamus*, while the band that runs near the anterior margin is much broader ; the middle and these wings are without the band that borders the posterior and exterior margins, except at the base of the former, where there is an abbreviated band, and but slight indication of spots (formed by a series of minute specks) on the latter. The dull black hirsute space is formed of a single large spot, which in *O. priamus* is composed of two, a large one and small one.

The under surface of the primary wings has the golden-green spots that occupy the spaces between the nervures divided by a wider irregular band than is found in *O. priamus*.

The secondary wings are without the black spots at the anal angle ; and the marginal border is much narrower, while the edge is less dentated than in *O. priamus*.

The under surface of the secondary wings has various gold marks not found in *O. priamus* : one in the discoidal cell ; and a spot above each of the black spots between the second and third discoidal nervules is very small, while the marginal black spots are further removed from the outer margin : the discoidal cell is more broadly surrounded with black.

Many of these peculiarities cause Mr. Wallace's insect to approach nearer the species I have named *Papilio (Ornithoptera) richmondia*, than any of the others recorded in my Catalogue of the family *Papilionidæ* ; viz. the want of the posterior and exterior band, the single form of the dull black space on the primary wings, the increased number of the golden spots on the under surface of the secondary wings, and the breadth of the black margin within the discoidal cell.

It may also be remarked that the female is decidedly more like that of *P. richmondia* in its colour and markings than the same sex of *P. priamus*.

# 11. DESCRIPTION OF A NEW SPECIES OF ENTOZOOON, SCLEROSTOMA SIPUNCULIFORME, FROM THE INTESTINES OF THE ELEPHANT. BY W. BAIRD, M.D., F.L.S.

The genus *Sclerostoma*, which forms only a section of the genus *Strongylus* of Rudolphi, but which has been adopted by De Blainville, Dujardin, and Diesing, is not numerous in species. Removing



the genus *Syngamus* of Siebold from it (which, however, is not admitted by Diesing), there would remain only four, or perhaps five species. Two of these have been observed in the Horse (*Equus caballus*), the Ass (*E. asinus*), and in the Mule; a third in the Pig (*Sus scrofa*) and in the Peccaries (*Dicotyles torquatus* and *albirostris*); a fourth in the American Tapir (*Tapirus americanus*); and perhaps a fifth in the Puma (*Felis concolor*). An addition to this small number may not be uninteresting.

The Sclerostome which I am now about to describe is a small Nematoid worm, of from 10 lines to 1 inch in length; of a light flesh-colour when alive, but nearly white in spirits. The body is cylindrical in shape, thicker in the middle, tapering towards each extremity, and finely striated across, though the striæ are rather distant from each other. The head is rather large, cylindrical, about 1 line in length, truncated at the apex, thicker than the neck, and separated from it by a distinct line or groove. The mouth is orbicular, placed in the centre of the truncated part of the head, and surrounded with two horny capsules or bullæ, the limb or margins of which are each armed with a row of numerous teeth. The limb of the external capsule is the larger of the two; and the teeth, though numerous, are less so than in the internal limb, and are stronger and pointed outwards. The limb of the inner capsule is much smaller, the teeth very minute and exceedingly numerous. This portion of the body does not differ in the two sexes.

The tail of the male is in the form of a membranous expansion or pouch surrounding this extremity of the body, and is divided into three lobes. The central lobe is the largest, and is supported by seven ribs or rays, three in the middle and two at each side. The three central ribs are dichotomous, and the middle one of these has its two branches sending off two or three short processes, like buds; the two others are simple. Of the lateral ribs (two on each side), the innermost one is dichotomous, the two branches into which it is divided sending off short processes or buds; the outer rib is simple. The two lateral lobes of this caudal expansion are smaller than the central one, and are each supported by four simple ribs.

The tail of the female terminates in a rather long and sharp point, which is oblique in position to the body, owing to a sort of tubercle, about half a line from its extremity, under which is situated the anus. This aperture is very distinctly seen immediately underneath the tubercle; and the vulva, which is not very conspicuous, and is in the form of a narrow slit across the body, is situated immediately above the tubercle.

The œsophagus is rather long, and terminates in a lobed stomach, which extends for a short distance and then terminates in a straight intestinal canal running through the whole length of the animal. The uterus is peculiar in form, and presents a very pretty appearance under the microscope; it is two-branched, and has during its length several expansions or swellings followed by contractions; and the ovaries are very long and twisted round the intestine.

This species of Sclerostome differs in many characters from any

other that I have seen. From the common Sclerostome of the Horse, *Scl. armatum*, it differs in the position of the vulva in the female, in the sharp pointed tail, and the cylindrical head; from the male it differs in the structure of the caudal pouch and the form of the head. From the other species found in the Horse, *Scl. tetracanthum*, it differs in the form of the head and the circle of teeth round the limb of the external capsule of the mouth, and in the structure of the caudal pouch of the male. They differ also in the relative sizes of the two sexes: in both of these species the female is longer than the male, whereas in the species now described the male is longer than the female; and it is rather curious that there is amongst the specimens collected a much greater proportional number of males than of females. From the two other species of Sclerostome found in the Pig and in the Tapir, this one differs in the structure of the caudal pouch of the male, the shape of the head, &c.

Very few opportunities, apparently, have occurred to helminthologists of examining the bodies of Elephants. In Diesing's enumeration of Entozoa found in the Mammalia, only one species is mentioned by him as having been observed and described as a parasite of this Pachyderm. This is an *Ascaris*, first mentioned by the celebrated Rudolphi as infesting the liver. The same parasitic worm has since then been found in the biliary ducts of a young Indian Elephant in America by Dr. Jackson of Boston. In his mention of this *Ascaris* (*Ascaris lonchoptera*, Diesing), Dr. Jackson states that it occurred along with numerous specimens of a *Distoma*, which he refers to the species *D. hepaticum*. The poor animal from which these worms were taken died of disease of the liver with ascites, and there was found also a large, deep, chronic ulcer in the stomach. The species here described will now make a third parasite recorded as belonging to the Elephant. I am indebted for it to Mr. Edward Gerard of the British Museum, who found it in the large intestines of a young Indian Elephant which recently died in London, after having been only a very short time in England. This animal, from Mr. Gerard's account of it, had suffered also from dropsy, as a large quantity of water escaped upon opening the abdomen.

#### SCLEROSTOMA SIPUNCULIFORME, Baird.

*Caput cylindricum, magnum, truncatum; oris limbo interno denticulis densis, externo aculeis majoribus numerosis, armato. Corpus rectum, utrinque attenuatum, sipunculiforme, bursa maris triloba, lobo intermedio producta, radiis septem (quorum quinque bifurcati sunt) instructo; lobis lateralibus radiis quatuor instructis; extremitate caudali feminæ oblique truncata, subulata, apertura genitali supra caudæ apicem.*

Long. feminæ 10 lineæ, long. maris 1 uncia.

*Hab.* In intestinis crassis Elephantici indici.

*Mus.* Brit.

12. DESCRIPTIONS OF NEW SHELLS IN THE COLLECTION OF  
H. CUMING. BY G. B. SOWERBY, F.L.S.

(Mollusca, Pl. XLIX.)

1. SPONDYLUS VICTORIÆ (fig. 8). *S. testa subregulari, depressa, ovali, alba, ad umbones roseo variegata, costis quatuor magnis, paululum elevatis, intermediis alternatis angustioribus; spinis majoribus elongatis, arcuatis, ad terminos palmatis, depressis, ad latera undulatum fimbriatis; spinis minoribus aculeatis, arcuatis, spinis valvæ inferioris elongatis, arcuatis, concavis.*

*Hab.* Gulf of California.

This beautiful *Spondylus* resembles *S. imperialis* in some respects, but the large spines are depressed and fringed at the sides almost like those of *S. cumingii*.

2. MUREX OCTOGONUS (fig. 7). *M. testa turbinata, subventricosa, spiraliter costata, pallide cinerea, ad costas medio fusco maculata; apertura ovali, cauda recta, laminata; costis octo crassis, nodulosis, imbricatis, superne aculeatim recurvis, medio frondis extantibus, sulcatis ornatis, ad caudam continuiter frondosis; spira obtusa, sutura subexcavata.*

*Hab.* New Caledonia.

In *M. humilis*, which this species most nearly resembles, there is a space without fronds on the ribs between the swollen part of the body-whorl and the caudal projection, while the ribs of this species are continuously frondose.

3. MUREX EXPANSUS (fig. 5). *M. testa fusiformi, carneola, tricostrata, spiraliter striata, inter costas unituberculata; costis fimbria lata, elevata, superne angulata, infra ad caudam terminali expansis; cauda brevi; spira elevata, acuta.*

*Hab.* China.

In Mr. Reeve's *M. eurypteron* the expanded fringe on the ribs terminates at the commencement of the caudal process, instead of being continued to the end, as in this species.

4. MUREX NUBILUS (fig. 4). *M. testa fusiformi, fusca, scabra, punctata, spiraliter striata, obscure trifasciata, longitudinaliter tricostrata, inter costas unituberculata; costis crassiusculis, scabrosis, superne spina fimbriata recta, medio fimbria paululum extanti, ad caudam spinis palmiferis tribus parvis armatis; spira elongata, acuta; cauda recta, mediocri.*

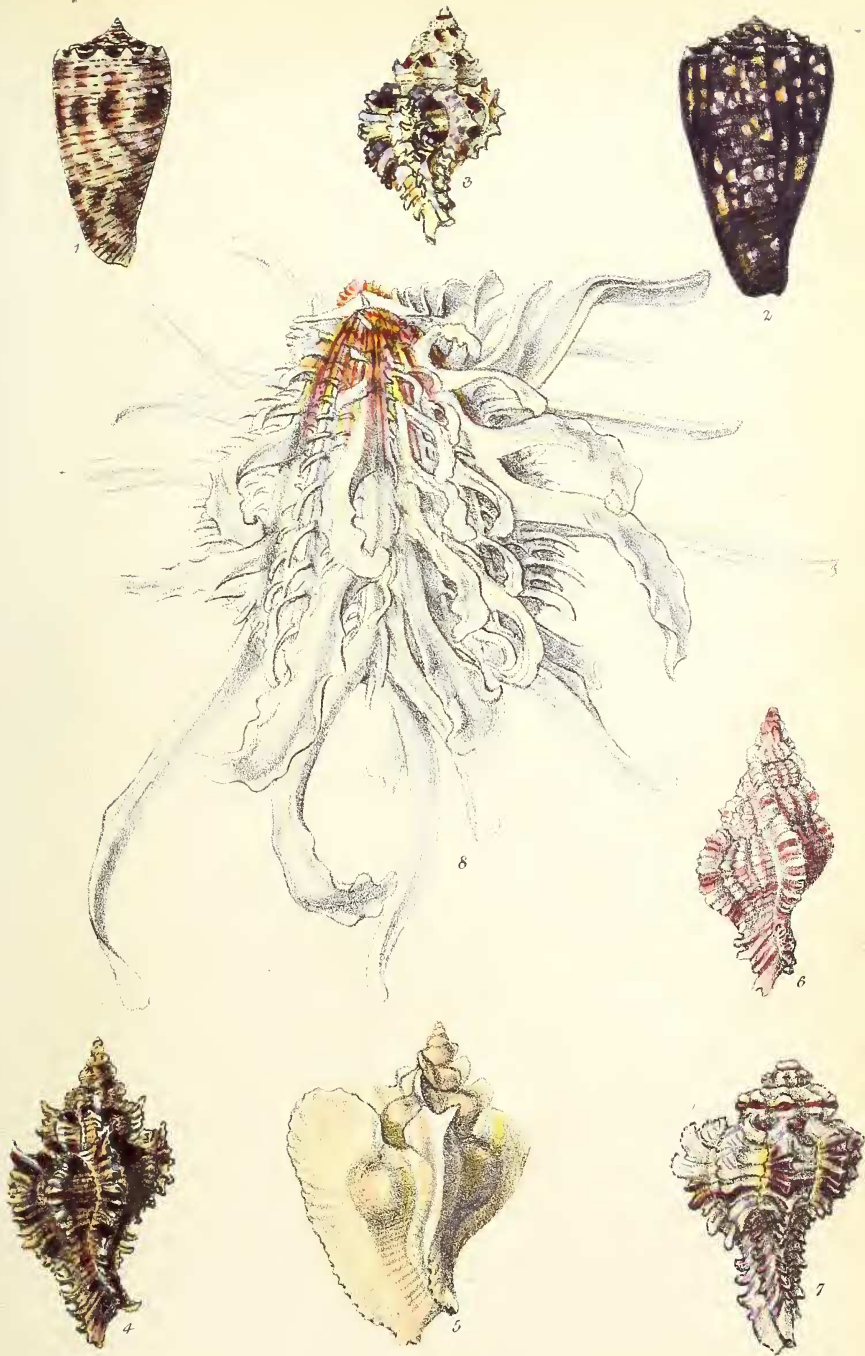
*Hab.* — ?

A dusky, ordinary-looking shell; and yet there is no other species which exactly corresponds with it.

5. MUREX TÆNIATUS (fig. 3). *M. testa fusiformi, fusco bifasciata, spiraliter costata, costis longitudinalibus octo crassis, imbricatis, frondosis; spinis brevibus, acutis, recurvis armatis; apertura parva, dentata; cauda acuta, obliqua, angusta, extanti; spira acuta, anfractibus quatuor subangulatis.*

*Hab.* Gulf of California.





G.B. Sowerby.

West imp

- 1 *Conus proximus* 2 *C. nigrescens* 3 *Murex tæniatus*.  
 4 *M. nubilus* 5 *M. expansus* 6 *M. roseotinctus*.  
 7 *M. octogonus* 8 *Spondylus Victoria*.

6. **MUREX ROSEO-TINCTUS** (fig. 6). *M. testa oblongo-fusiformi, pallide rosea, maculis roseis ornata, oblique tricostata, inter costas medio crenulatum nodulosa; costis elevatis, superne intermibus striatis, ad caudam spinis subfimbriatis tribus parvis armatis; cauda lata, costata; spira elongata.*

*Hab.* Philippines.

Resembling *M. trigonulus*, but wanting the expanded fringe at the lower part of the fronds of that species.

7. **CONUS PROXIMUS** (fig. 1). *C. testa oblonga, subpyriformi, inferne subcoarctata, spiraliter lineis subelevatis castaneis albo interruptis cincta, medio maculis magnis nigrescentibus in seriebus duabus picta; spira nodulis acutis coronata inter nodis castaneo lineata.*

*Hab.* — ?

More neatly marked and much more smooth than *C. moluccensis*, which in form it resembles.

8. **CONUS NIGRESCENS** (fig. 2). *C. testa oblonga, tuberculis parvis, acutis, distantibus coronata, medio et infra alternatim striata, prope angulum subrotunda, fusco-nigrescente, maculis cordiformibus rubescentibus, et alteris albis ad angulum, prope medium, et infra medium fasciatim dispositis ornata.*

*Hab.* — ?

There is a semitransparent appearance about this Cone which, with the smallness of its cordiform white spots, distinguishes it from *C. nocturnus* and others of the same group.

13. **DESCRIPTIONS OF NEW UNIVALVE SHELLS FROM THE COLLECTIONS OF H. CUMING AND SYLVANUS HANLEY. BY SYLVANUS HANLEY.**

1. **PSEUDOLIVA ANCILLA.** *Testa oblongo-conica, nitida, solida, imperforata, sublævigata, fulvo-rufescens. Ultimus anfractus in medio pallescens et ventricosus; superne late, haud autem profunde, concavus; inferne lente declivis, et sulco lato, qui partem fere quartam superficiei segregat, incisus: cingulum siphonale planum cum cingulo basali vix convexiusculo confluens. Spira producta tertiam partem longitudinis testæ implet; anfractus ejus 4 haud humiles infra suturam conspicuam et profundam retusi sunt, supra eam convexi: apex obtusus. Apertura elliptico-acuminata (duos trientes longitudinis testæ fere æquat), postice callo columellari albo magno prominente et angulato angustata. Labium columellare læve, album, convexum, falcatum, latiusculum.*

Long.  $1\frac{5}{8}$ , lat.  $\frac{7}{8}$  poll.

*Hab.* Caffrariam.

*Mus.* Hanley.

I have never seen but a single individual of this remarkable-looking shell, which reminds one alike of *Bullia* and *Ancillaria*. The whorls



of the spire are not twice as broad as high. The basal distinctive groove is nearly square-cut; its bottom is closely traversed by wrinkles of increase, and is flat, not concave.

2. *PSEUDOLIVA NASSOIDES*. *Testa parva, solida, imperforata, ovali-conica, fulvo-rufescens, lævigata. Ultimi anfractus antice satis declivis fere quartam partem segregat sulcus latus profundus. Cingulum siphonale pallidum retusione cinguli basalis fit prominentior. Spira satis producta tertiam partem longitudinis testæ implet; sutura simplex anfractus ejus 4 convexos profunde dividit: apex obtusiusculus. Apertura parva, subelliptica, antice posticeque angustata, dimidium longitudinem testæ haud multum superat. Labium columellare crassum, album, læve, callo pliciformi nullo postice munitum, sed ad extremitatem anticam subuniplicatum.*

Long.  $\frac{3}{8}$ , lat.  $\frac{3}{16}$  poll.

*Hab.* Malabaricum littus.

*Mus.* Hanley.

The only specimen known to me bears the aspect of being fully adult. Its outer lip seems thickened externally, and the tooth-like projection over the characteristic groove is rather conspicuous.

3. *DOLIUM FAVANNII*. *Testa subglobosa, magis minusve valida, longitudinaliter arcte corrugata, fulvo-rufescens, costis (quarum circiter 16 anfractus ultimum, et 4 penultimum cingunt) a maculis brunneis pallidisque remote tessellatis, latiusculis, rotundatis, et valde prominentibus, conspicue ornata. Sulcorum interstitialium (qui costarum magnitudinem æmulantur) pauci in anfractu ultimo superiores, omnesque in gyris spiræ brevissimæ humilibus linea elevata divisi. Sutura excavata. Labium exterius repandum: labii interioris lamella haud (ut in *D. fimbriato*) libera extans. Exitus umbilici satis magni latus et lævis. Extremitas cinguli siphonalis rotundati eminentis et inconspicue porcati haud caudata.*

Long.  $2\frac{7}{10}$ , lat.  $2\frac{6}{10}$  poll.

*Hab.* —?

*Mus.* Cuming.

This very rare shell is intermediate in aspect between *D. chinense* and *D. fimbriatum*: from the former it may be distinguished by the pattern of its colouring, and the coarseness and fewness of its ribs; from the latter by its very dissimilar shape, its umbilicus, &c. The whorls, which rise concavely from the profound suture, do not gradually taper above, but seem, as it were, truncated. The rounded body is about as broad as it is long; its anterior declination is sudden. The spots with which all the ribs, but not their intervals, are painted, are often cloudy.

Having as yet seen only two specimens (on one of which the last-formed portion of the ribs was roughened by a few irregular raised spiral lines), I cannot say that the outer lip may not, in perfect and adult individuals, become reflected and dentated.

4. **DOLIUM DUNKERI.** *Testa magis minusve solida, ovato-globosa, fulva aut livido-carnea, maculis parvis brunneis remotis, maculisque majoribus albidis (super costas fere omnes) subtessellatim picta: maculæ sæpissime in seriebus longitudinalibus undulatim ordinatæ. Costæ multæ, confertæ, plano-convexæ, sulcis perangustis subbiangulatis divisæ. Spiræ anfractus breves inflati: corpus ventricosum, antrorsum lente declive. Sutura simplex. Apertura haud valde lata, fauce brunnea. Labium exterius haud reflexum haud dentatum; intus, autem, lyratum. Cingulum siphonale haud prominens, haud caudatum.*

Long.  $1\frac{7}{12}$ , lat.  $1\frac{1}{8}$  poll.

*Hab.* Portum Natal.

*Mus.* Cuming.

The sculpture of this rare shell, of which no example is known in fine condition, reminds one of *cumingii*; upon the whole, however, *D. variegatum* is its nearest congener. As the largest specimen examined by me, although solid, and copiously spread with parietal enamel, had only attained to two volutions and a half (the first of a pinkish cast) beyond its smooth yellow nucleus, I am not sure that it was adult. Its body was encircled by eighteen ribs, in the narrow intervals of the few superior ones of which might be discerned the commencement of a raised stria. Its spire was remarkably short in comparison with the elongated and rather narrow aperture: its contracted umbilicus was almost concealed by the pillar-lip.

The following list of additions made to the Menagerie during the month of July was read :—

1 Blenny.....	<i>Blennius viviparus</i> .....	English Coast...
6 Actinie .....	<i>Adamia palliata</i> .....	English Coast...
6 Hermit Crabs .....	<i>Pagurus prideauxii</i> .....	English Coast...
2 Californian Quails .....	<i>Callipepla californica</i> .....	California .....
2 Ariel Toucans.....	<i>Rhamphastos ariel</i> .....	Brazil .....
6 White-crowned Pigeons.....	<i>Columba leucocephala</i> .....	Mexico .....
1 Australian Goshawk .....	<i>Astur novec hollandiae</i> .....	Australia.....
1 Red-billed Tropicbird .....	<i>Rhamphastos erythrorhynchus</i> .....	Cayenne .....
3 Wax-wing Chatterers.....	<i>Ampelis garrula</i> .....	Norway .....
2 Zebra Wax-bill Finches .....	<i>Estrela lateralis</i> .....	W. Africa .....
1 Sooty Phalanger.....	<i>Phalangista fuliginosa</i> .....	Australia.....
2 Brush-tailed Porcupines.....	<i>Atherura africana</i> .....	W. Africa .....
2 American Squirrel .....	<i>Spermophilus guttatus</i> .....	N. America.....
2 Spotted Salamanders .....	<i>Salamandra vulgaris</i> .....	Europe .....
1 Iguana.....	<i>Iguana</i> .....	Antilles? .....
30 Crested Blennies.....	<i>Blennius palmicornis</i> .....	England .....
2 Jerboas .....	<i>Dipus aegyptius</i> .....	N. Africa .....
1 Hawk-billed Turtle .....	<i>Chelonia imbricata</i> .....	W. Africa .....
1 West African Boa .....	<i>Python regius</i> .....	Java .....
1 Musk Deer .....	<i>Tragulus javanicus</i> .....	S. America.....
1 Crab-eating Raccoon .....	<i>Procyon cancrivorus</i> .....	India .....
1 Axis Deer .....	<i>Axis maculata</i> .....	India .....

Purchased.

Presented by J. T. Clarke, Esq.  
Presented by C. Fitzgerald, Esq.  
Presented by George Moss, Esq.  
Presented by David Ross, Esq.  
Presented by W. Maudslay, Esq.

Of these, the *Pagurus prideauxii* and *Rhamphastos erythrorhynchus* were stated to be exhibited for the first time.

The following list of additions to the Menagerie during the month of August was read :—

5	Water Tortoises .....	{ <i>Enys tectum</i> .....	River Ganges ...
		{ <i>Enys hamiltoni</i> .....	River Ganges ..
2	Blue-capped Lories .....	<i>Lorius domicella</i> .....	Moluccas .....
1	Yellow-headed Amazonian Parrot.....	<i>Chrysotis ochroptera</i> .....	Mexico .....
2	Multicolor Parakeets .....	<i>Psephotus multicolor</i> .....	Australia.....
2	Baltimore Orioles .....	<i>Icterus baltimorensis</i> .....	N. America.....
2	Young Gulls .....	<i>Larus</i> —? .....	Mogador .....
1	Vulpine Phalanger .....	<i>Phalangista vulpina</i> .....	Australia.....
		{ <i>Macropus bennetti</i> .....	Australia.....
2	Kangaroos .....	{ <i>Halmaturus billardieri</i> .....	Europe .....
10	Salamanders .....	<i>Salamandra vulgaris</i> .....	Australia.....
1	Gonga Cockatoo .....	<i>Callocephalon galeatum</i> .....	W. Africa .....
2	Cranes .....	<i>Balearcica pavonina</i> .....	W. Africa .....
1	Sooty Monkey .....	<i>Cercocebus fuliginosus</i> .....	N. America.....
2	American Blue Jays .....	<i>Garrulus cristatus</i> .....	England .....
12	Crested Blennies.....	<i>Blennius palmicornis</i> .....	England .....
1	Wrasse.....	<i>Labrus maculatus</i> .....	England .....
12	Prawns .....	<i>Palenon serratus</i> .....	England .....
1	Lobster .....	<i>Homarus vulgaris</i> .....	England .....
12	Hermit Crabs .....	<i>Pagurus berhardi</i> .....	England .....
4	Chestnut Weaver-birds .....	<i>Hyphantornis castaneifusca</i> .....	W. Africa .....
1	Common Weaver-bird .....	<i>Hyphantornis textor</i> .....	W. Africa .....
2	Mocking Birds .....	<i>Mimus polyglottus</i> .....	N. America.....
1	Red and Blue Maccaw .....	<i>Ara chloroptera</i> .....	Guiana .....
1	Yellow and Blue Maccaw .....	<i>Ara ararauna</i> .....	Brazil .....
1	Chinese Starling.....	<i>Acridotheres cristatellus</i> .....	China .....
5	American Ground-Doves .....	<i>Geotrygon montana</i> .....	S. America .....
1	Ocelot (young) .....	<i>Felis mitis</i> ? .....	S. America .....
1	Black-tailed Parakeet .....	<i>Polyteles melanurus</i> .....	Australia.....
1	Green Frog .....	<i>Hyla viridis</i> .....	Europe .....
1	Land Tortoise.....	<i>Testudo</i> , sp. ? .....	Europe .....

Purchased.

Presented by H. Pollock, Esq.  
Presented by Mr. Davidge.



List of additions in August (*continued*).

1 Grey-breasted Couure .....	<i>Conurus murinus</i> .....	S. America .....	Presented by Mrs. Malcolm.
2 Groups of Corynactis .....	<i>Corynactis allmanni</i> .....	English Coast...	Presented by Mrs. Henry.
2 Groups of Corynactis .....	<i>Corynactis allmanni</i> .....	English Coast...	Presented by Mrs. Forster.
2 Finches .....	.....	.....	Presented by Major Verner.
1 Elegant Parakeet .....	<i>Euphema elegans</i> .....	Australia.....	Presented by Mr. Jamrach.
1 Monkey .....	.....	.....	Presented by John Davie, Esq.
2 Horned Toads .....	<i>Ceratophrys cornutus</i> .....	S. America .....	Presented by Captain Abbott.
1 Macaque Monkey .....	<i>Macacus cynomolgus</i> .....	Java .....	Presented by Mr. Bartlett.
12 Actinæ .....	<i>Actinia troglodytes</i> .....	England .....	Presented by Mr. Du Pasquier.
1 Rhesus Monkey .....	<i>Macacus rhesus</i> .....	India .....	Presented by T. Cooke, Esq.
1 Wanderer Monkey .....	<i>Silenus vetus</i> .....	Cochin China .....	Presented by H. D. Willock, Esq.
1 Crocodile (young) .....	<i>Crocodilus americanus</i> .....	Nicaragua .....	Presented by Mr. Fletcher.
26 Actinæ .....	<i>Anthea cereus</i> .....	English Coast...	Presented by W. Hindley, Esq.
1 Common Otter .....	<i>Lutra vulgaris</i> .....	England .....	Presented by Mr. Church.
1 Bonneted Monkey .....	<i>Macacus pileatus</i> .....	India .....	Presented by Major Bent.

Of these, *Emys tectum*, *Emys hamiltoni*, *Callocephalon galeatum*, *Hyphantornis castaneofusca*, *Geotrygon montana*, and *Ceratophrys cornuta* were stated to be exhibited for the first time.

The following list of additions to the Menagerie during the month of September was read :—

2 Australian Purple Waterbans .....	<i>Porphyrrio melanotus</i> .....	Australia.....	Presented by Dr. F. Müller.
1 Guinea Baboon .....	<i>Cynocephalus sphinx</i> .....	Guinea .....	Presented by J. C. Clarke, Esq.
1 Green Lizard .....	<i>Lacerta viridis</i> .....	Europe .....	Presented by Dr. Bowerbank.
1 Chameleon .....	<i>Chameleo africanus</i> .....	Africa .....	Presented by J. T. Davidson, Esq.
2 Red-headed Cardinals .....	<i>Paroaria cucullata</i> .....	South America.	} Presented by J. G. Leeming, Esq.
1 Black-crested Cardinal .....	<i>Gubernatrix cristatella</i> .....	South America.	
1 Nonpareil Finch.....	<i>Spiza ciris</i> .....	North America.	

4	Gannets .....	<i>Sula bassana</i> .....	England .....	Presented by J. Hawkshaw, Esq.
2	Thick-knees .....	<i>Edicnemus crepitans</i> .....	England .....	Presented by Mr. Pell.
1	Chamaeleon .....	<i>Chamaeleo africanus</i> .....	Africa .....	Presented by R. Ellis, Esq.
6	Kingfishers .....	<i>Alcedo isipda</i> .....	England .....	} Purchased.
1	Philantomba Antelope .....	<i>Cephalophus maxwellii</i> .....	W. Africa .....	
1	Osprey .....	<i>Pandion haliaetus</i> .....	England .....	
1	African Horned-Owl .....	<i>Bubo maculosus</i> .....	W. Africa .....	
1	Chanting Falcon .....	<i>Melierax polyzonus</i> .....	W. Africa .....	
2	Bonelli's Eagles .....	<i>Aquila bonelli</i> .....	N. Africa .....	
2	Servals .....	<i>Felis serval</i> .....	S. Africa .....	

Of these, *Bubo maculosus* and *Melierax polyzonus* were stated to be exhibited for the first time.

The following list of additions to the Menagerie during the month of October was read :—

1	Muntjac Deer .....	<i>Cervulus vaginalis</i> .....	India .....	Presented by His Excellency Sir G. Grey, K.C.B.
1	Bald-headed Ibis .....	<i>Geronticus calvus</i> .....	S. Africa .....	Presented by His Excellency Sir G. Grey, K.C.B.
1	Duyker Bok .....	<i>Cephalophus, sp. ?</i> .....	Angola .....	Presented by George Brand, Esq.
1	Blue and Yellow Macaw .....	<i>Ara aracanga</i> .....	S. America .....	Presented by A. Russell, Esq., M.P.
8	Actinix .....	<i>Actinia crassicornis</i> .....	English Coast .....	Presented by F. Roxburgh, Esq.
2	Chinese Geese .....	<i>Anser cygnoides</i> .....	Foochoo .....	Presented by Russell Sturgis, Esq.
1	Thibetan Bear .....	<i>Helarctos tibetanus</i> .....	N. India .....	Presented by W. H. Russell, Esq.
2	Common Herons .....	<i>Ardea cinerea</i> .....	England .....	Presented by Hon. C. A. Ellis.
1	Cinereous Eagle .....	<i>Haliaeetus allicollis</i> .....	England .....	Presented by Lieut. A. Kinloch.
1	Coati-mondi .....	<i>Nasua fusca</i> .....	S. America .....	Presented by Sir Malcolm McGregor.
1	Kiang .....	<i>Equus kiang</i> .....	Tibet .....	Presented by Major Hay.
1	Perch .....	<i>Perca fluviatilis</i> .....	England .....	} Presented by — Skidmore, Esq.
1	Roach .....	<i>Leuciscus rutilus</i> .....	England .....	
2	Chub .....	<i>Leuciscus cephalus</i> .....	England .....	
3	Lamprens .....	<i>Petromyzon fluviatilis</i> .....	England .....	
1	Loach .....	<i>Cobitis barbatula</i> .....	England .....	

List of additions in October (*continued*).

1 Lepidosiren.....	<i>Lepidosiren amietensis</i> .....	Gambia .....	Presented by James Thomson, Esq.
1 Indian Bull.....	<i>Bos zebu</i> , var.....	India .....	Presented by Dr. Shortt.
1 Common Raven .....	<i>Corvus corax</i> .....	England .....	Presented by Miss Prichard.
2 Hill Minas .....	<i>Gracula intermedia</i> .....	India .....	Presented by M. J. Harpley, Esq., R.A.
1 White-crested Cockatoo.....	<i>Cacatua moluccensis</i> .....	Moluccas .....	
1 Ichneumon .....	<i>Herpestes griseus</i> .....	India .....	
10 Shieldrakes.....	<i>Tadorna vulpanser</i> .....	Europe .....	
2 Golden Agoutis .....	<i>Dasyprocta aurea</i> .....	S. America .....	
1 Snake .....	<i>Erethizon dorsatum</i> .....	Europe .....	
1 Canadian Porcupine .....	<i>Suricata zenil</i> .....	N. America.....	
1 Suricate .....	<i>Chamaeleo africanus</i> .....	S. Africa.....	
1 Chameleon.....	<i>Calamophilus biarmicus</i> .....	England .....	
3 pairs Bearded Titmice .....	<i>Cephalophus</i> .....	England .....	
1 Antelope .....	<i>Callipepla californica</i> .....	California .....	
5 Californian Quails .....	<i>Macacus rhesus</i> .....	India .....	
1 Rhesus Monkey .....	<i>Palaornis javanica</i> .....	Java .....	
2 Osbeck's Parrots.....	<i>Cacatua ducorpsi</i> .....	Salomon Islands	
1 Ducorps' Cockatoo.....	<i>Grus cinerea</i> .....	Europe .....	
1 European Crane .....	<i>Anthropoides virgo</i> .....	Europe .....	
1 Demoiselle Crane .....	<i>Rupicapra</i> .....	Europe .....	
1 Chamois .....	<i>Gerbillus</i> .....	Africa .....	
3 Gerbilles .....	<i>Phanicopterus erythraeus</i> ?	Egypt .....	
2 Flamingoes .....	<i>Caccabis barbara</i> .....	N. Africa .....	
6 Barbary Partridges.....	<i>Rallus aquaticus</i> .....	England .....	
1 Water Rail .....			

Of these, the *Equus kiang* and *Cacatua ducorpsi* were stated to be exhibited for the first time.